THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation

INCORPORATING

The Railway Engineer · TRANSPORT · The Railway News

The Railway Times · Herapath's Railway Journal · THE RAILWAY RECORD.

RAILWAYS ILLUSTRATED · ESTABLISHED 1835 · THE RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL., LONDON"
Telephone No.: WHITEHALL 9233 (8 lines)

Annual subscription payable in advance and postage free
British Isles and Abroad .....£2 5s. 0d.
Single Copies .....One Shilling
Registered at the General Post Office, London, as a Newspaper

VOL. 81 No. 14 FRIDAY, OCTOBER 6, 1944

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DIESEL RAILWAY TRACTION SUPPLEMENT

The October issue of THE RAILWAY GAZETTE *Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price* 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

NOTICE TO SUBSCRIBERS

Consequent on the paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 a.m. till 5.30 p.m.
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Workmen's Compensation

FAR-REACHING changes in workmen's compensation are made in the Government's plan for an Industrial Injury Insurance Scheme, outlined in a recently-issued White Paper. Workmen's compensation is to be taken out of the realm of private financial interests and lump sum payments, except for minor disablement, are abolished. Benefits are expected to cover approximately £20,000,000 a year, and liability, instead of being on the individual employer, will be on the central fund out of which all benefits and administrative charges will be paid. This central fund will be maintained by weekly contributions by employers and workmen and a contribution from the Exchequer. It is stated that although the scheme is to be under the general charge of the Minister of Social Insurance, provision is to be made for the collaboration of industry in its development and administration in two ways. First, an advisory committee will be set up on which employers and workmen will be equally represented to advise the Minister on important matters of policy and administration. Secondly, employers and workmen will be represented on the local appeal committees. Claims will be dealt with by a Pensions Officer, subject to appeal to local tribunals, and further to an Industrial Injury Insurance Commissioner, whose decision will be final.

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Winter Coal Difficulties

The Minister of Fuel & Power has stated that the coal outlook for the winter is worse than at any time since the war. Despite all the devices employed by the Government, output has fallen; the demands of the Armed Forces are heavy, and likely to increase. He added that the percentage of avoidable absenteeism in the mines was 5·7 during the 21 weeks to September 9 last, as compared with 4·8 during the corresponding period in 1943. That is an increase of about one-fifth and is a grievous admission, in view of the measures taken to improve mining conditions, which speaks ill of the success attending Government control of this industry. The Chairmen of two colliery companies have spoken bluntly recently. Mr. O. J. Philipson, Chairman of Manvers Main Collieries, told his shareholders that only under private enterprise, with a minimum of unnecessary controls and restrictions, could the industry attain maximum efficiency and prosperity, and Sir Henry Stephenson, at the meeting of the Sheepbridge Coal & Iron Company, pointed out that as wages and other costs have increased progressively, output has progressively declined, resulting in scarcity and high prices. That is the outcome of operation under tightened Government control. The transfer of power from colliery managements to a Government department has served the interests of neither the consuming public, the mineowners, or, in the long run, of the workers.

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Great Southern Stocks Inquiry

The report of the official inquiry into dealings in the stocks of the Great Southern Railways Company during the period between January 1 and November 18, 1943, has been made public. For the purposes of the inquiry a tribunal of three judges was appointed by the Eire Government on December 1, 1943, and this tribunal held 26 sittings, completing the hearing on June 23, 1944. There was an abnormal amount of dealings in the stocks of the company during the ten weeks preceding the date of publication of the terms of the proposed reorganisation of the company's capital, with the result that some suspicion had been created of improper leakage of information. The tribunal in its report finds that there had been no improper use of information, except in certain specified instances, and these the tribunal considered to be unimportant, involving no substantial dealings, and leading to no further transactions. It was added that the extent of the purchases made by the larger purchasers seemed to indicate a remarkable firmness of faith in the prospects of the company notwithstanding the apparent counter-indications in the Chairman's speech at the annual meeting on March 3, 1943, and the speech of the Minister in Dail Eireann on May 26. The tribunal is satisfied that there were no dealings in the stocks by anyone in the Ministry or by the Chairman of the company, and commends the steps taken to preserve secrecy.

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Post-War British Locomotive Production

In the House of Commons on September 26, Mr. T. H. Hewlett, Conservative Member for the Exchange Division in Manchester, asked the President of the Board of Trade whether any plans were being evolved for the large scale production of British locomotives after the war, as replacements and additions were urgently needed in many parts of the British Empire. Mr. Dalton replied in the affirmative, and said that when the present high output of locomotives for military use was no longer neces-

sary, the industry would be able to devote itself to meeting the demands of Empire and other overseas countries. The considerable part which the British locomotive building industry has played in furthering the war effort, and the important place it holds among potential British export trades, makes it essential that the time should not be delayed too long before it is placed in a position to treat with overseas buyers. The demand for locomotive replacements and new building is known to be heavy in many countries, and facilities should be afforded to British manufacturers to ensure that a fair proportion of the business offering, finds its way on to their books.

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"Carrier" Working on the Railways

The address given by Mr. W. Thomson before the Institution of Railway Signal Engineers on September 27, dealt with a subject of high technical interest and one which requires a great deal of study, supported by some experience, before its functioning can be grasped thoroughly. It is well known that our public communications system has been completely altered in its details and working capacity by the developments in the arts of telegraphy and telephony, resulting from the invention of the thermionic valve and also certain advances in physics that have added to our knowledge of electricity and changed our conception of its fundamental nature. The application of the "carrier" system of transmission, which offered such valuable possibilities in the Post Office service, became in turn helpful to the railways, who have to maintain extensive communication networks of their own. These have grown considerably in range since the grouping made it necessary to be able to communicate over wider areas than formerly. The carrier system in its results, of course, is scientifically a continuation of the earlier methods devised for making the maximum use of the available conductors, on which so much ingenuity has been bestowed.

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Indian Railways and the War

In common with railways in most parts of the world, the railways of India have encountered many difficulties during the war, but they have been overcome, one by one, by the determination and tenacity of purpose of railwaymen of all grades, caste, and creed, and the total contribution to the war effort is known to have been great. As it is likely that India will continue to occupy an important place in the war strategy for some time to come yet, comparatively few precise details have been made available for publication of what the Indian railways have done and are doing. Nevertheless, Sir Leonard Wilson, Chief Commissioner of Railways, Government of India, gave a good general picture in a broadcast talk from the Delhi Station of All-India Radio, last month, of which we publish a lengthy abstract on page 339. He emphasised that there is no form of land transport so durable as railways, so difficult to be put out of action, or so quickly restored. As in other parts of the world, sections of railways in India are being doubled and quadrupled, locomotive and wagon stocks are being increased, and the workshops are producing a great variety of war supplies. Radio communication has been installed, and substantial improvements have been made in telecommunication generally. The fact that about 90 per cent. of the route mileage in India is single line has placed a particularly severe burden upon the traffic and the running staffs, and no small part of the success of the heavy traffic achievements is due to their vigilance and unremitting toil.

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The Winter Train Service

The British main-line railway winter timetables, effective from October 2, restore practically in its entirety the train service which was operating until the introduction of the summer timetables on May 22, and cancel the extensive emergency train service reductions that followed. Indeed, certain trains which had been withdrawn even prior to the general withdrawals just mentioned, such as the G.W.R. 12.30 p.m. from Paddington to Weymouth, are now restored, as well as important trains which have remained out of action throughout the summer, notably the L.M.S.R. 1 p.m. from Euston to Glasgow and the 1 p.m. from Glasgow to Euston. The L.N.E.R. is able to announce week-end amplifications of service which have not previously figured in the winter timetables, such as the 9.15 a.m. express from Kings Cross to Newcastle on Mondays, Fridays, and Saturdays, and the corresponding return train at 12.25 p.m. from Newcastle; also a 12.55 p.m. express on Fridays and Saturdays from Kings Cross to Leeds and Bradford. On the L.M.S.R. another service of considerable value that is now restored is the Belfast boat service *via* Heysham, but sailings are on alternate days only, and departures from and arrivals in London are on Tuesdays, Thursdays, and Saturdays only. The joint L.N.E.R.-G.W.R.-S.R. train between Newcastle, Sheffield, Leicester, Banbury, Oxford, Reading and Ashford (Kent) has been diverted from Oxford to Southampton, and is once again running daily, though not as yet publicly advertised.

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Transport Rehabilitation in China

Dr. T. F. Tsiang, the member for China on the U.N.R.R.A. Council, and Chief Political Secretary of the Executive Yuan (branch) of the Chinese Government since 1938, at a recent press conference in Montreal said that China's first immediate need in the post-war period will be rehabilitation of transport. China has requested the assistance of U.N.R.R.A. on this key problem, but the Chinese Government realises that U.N.R.R.A. activities are necessarily confined to temporary rehabilitation measures, in transport as well as in other fields. Dr. Tsiang said he thought that U.N.R.R.A. could help in providing lorries, petrol, some railway equipment, and supplies for the repair of bridges, which were vital to re-establishing transport services at the beginning of the post-war era, but this would be only the first step. China has always been a large importer of timber, and will need large supplies after the war for transport and industrial rehabilitation. Steel rails, locomotives, and passenger and goods rolling stock, will all be required in great quantities, and, although tentative arrangements have been made for second-hand equipment to be secured from war surplus stocks, China should prove a substantial market for the western industrial countries.

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Social Amenities for Isolated Railwaymen

The position of railwaymen located in sparsely-populated areas provides a problem for railway administrations in many parts of the world, including those in countries which are often regarded as densely occupied. In Great Britain, for example, there are areas in the Border country, in the Scottish Highland, and in remote parts of Wales, where small communities of railwaymen are separated from the ordinary means of social life and entertainment. With the invasion and occupation by Germany of Poland and parts of Russia, the Reichsbahn was faced with this problem both extensively and acutely, and one of the steps which it took to meet the situation was the provision of a special recreation train, of which we give brief particulars on page 331. Every German railwayman in an area about to be visited by the train is sent a striking invitation card telling him that a comfortable meeting room (with films and music and beer and cigarettes provided) is available on the train. One large van contains the combined club room and film theatre, and the other the generator room and train staff living accommodation. This recreation train contains a number of new features which appear to possess possibilities in the post-war period, and the facilities which the German State Railway has found it necessary to provide for lonely railwaymen even in the midst of war should prove of interest to other railway administrations dealing with comparable problems.

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Diesel Railway Traction in India

Diesel railway traction has made comparatively little progress in India, but under lease-lend the United States is introducing between 30 and 40 diesel shunting locomotives to the Indian railways. It is possible that the much increased cost of coal, which is now equal to about 18s. a ton, as compared with 5s. 3d. a ton in 1940, and the considerable distances of some of the coalfields from the railways, may lead to further consideration being given to this form of traction after the war. The difficulty of water supply in certain parts of India may also have its influence in this direction. In some districts, notably the South West Punjab, Sind, and Baluchistan, the water supplies are precarious and, in many instances, the water is unsuitable for locomotives without treatment. Some sections on the North Western Railway of India are waterless for 100 miles or more and the need to carry the necessary water for the engines greatly reduces the pay-load of the trains. An article which appears in the current issue of *The Railway Gazette, Diesel Railway Traction Supplement,* sets out a number of the considerations, based on practical experience of steam locomotive power, which may enter into a decision as to whether diesel traction should be adopted in India.

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Road Motors : History and Conjecture

In a masterly survey, Mr. John Shearman (Road Motor Engineer, L.M.S.R.) prefaced his presidential address to the Institution of Automobile Engineers on Tuesday evening with an historical survey of the technical achievements of the road motor pioneers of the period 1820-1840, when they were using steam

pressures up to 250lb., against then railway practice of but 50 lb. He then discussed the possibilities of again using home-produced fuels for road motor vehicles in this country, and said that, at bulk prices ruling before the war, 1s. spent on coal would buy 1,750,000 British thermal units, whereas it secured only 150,000 if spent on fuel oil. Nevertheless, Mr. Shearman's fuel consumption figures lead to the conclusion, sorry as he was to say it, that the future of the steam vehicle was poor, unless a radical redesign, including a condensing system, could be evolved. In purely quantitative terms, the coal required to move a 5-ton payload 50 miles, was 76 lb. with producer gas, 137 lb. with compressed town gas, 200 lb. with synthetic petrol, 311 lb. with a steam motor, and 350 lb. with a battery vehicle. These figures compared with 50 lb. of petrol. Producer gas seemed to offer the greatest possibilities (excepting battery vehicles for short-mileage work) and he saw no reason why a vehicle and producer-gas plant, designed afresh as one unit, should not give reasonably good results

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Open versus Closed Carriages 70 Years Ago

Arising out of Mr. John Elliot's remarks at the Maidstone Railway Centenary proceedings on September 25, on the question of central corridor or compartment carriages, a correspondent recalls the use many years ago on the South Eastern North Kent line of "open saloons" for first-class passengers. These in their internal fittings largely resembled the "second-class saloons" of a later date which were frequently used for accommodating school parties. They had, of course, no lavatory accommodation. Before the opening of the London Chatham & Dover Railway extension to Maidstone in 1874, our correspondent's grandmother, who lived about 4 miles from Maidstone, in her journeys between Maidstone and London preferred to drive into Maidstone to the North Kent Station (now known as Maidstone West) rather than to her nearest station (Wateringbury), which would have involved a change either at Paddock Wood or Tonbridge. She had a great dislike to the "open saloons" on the North Kent line, which she was often obliged to use. From 1874 onwards she regularly used the Chatham line between Maidstone and London, which she found quieter, and on which ordinary compartments were always available.

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Diesel-Electric Shunting Locomotives for the L.N.E.R.

Diesel-electric shunting locomotives on the L.M.S.R. have been in use since 1934 and the total amounted to 53 by 1938—the last year for which pre-war published statistics are available. In our March 31 issue an abstract was published of a paper giving the results of ten years' experience on the L.M.S.R. which was read by Mr. C. E. Fairburn, Chief Mechanical & Electrical Engineer, L.M.S.R., before the Institution of Locomotive Engineers. Based on the experience of the L.M.S.R. with diesel-electric shunting locomotives, the L.N.E.R. has decided to build four similar units at its Doncaster Works; the electrical equipment has been supplied by the English Electric Co. Ltd. Some of these are now running on the L.N.E.R. and all will be sent to the same marshalling yard where tests will be carried out; this yard will have special maintenance facilities, and it is hoped that the locomotives will be able to work for 24 hours a day for two weeks before requiring attention. The locomotives are in nearly every respect the same as those in use on the L.M.S.R., the main difference is that the L.N.E.R. locomotive, in the event of one of the company's works or pumping stations being put out of commission, can be used as a mobile power station.

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Locomotive Driving by Contract

A railway document of unusual interest has been sent to us by Mr. F. M. Binns, of Blackpool, and is reproduced on our "Scrap Heap" page. It is an agreement between locomotive drivers and the Southern Division of the L.N.W.R., and was apparently in force in 1858. Under it, it seems, the L.N.W.R. contracted out the driving of the locomotives working at least its goods trains, and, for 5d. per train mile, the driver paid the wages of his fireman and cleaner and provided for all materials used on the run, as well as undertaking to meet any repairs necessary to certain parts. There was specific provision for charging the driver for assisted miles, and for paying him for similar work. It is interesting to note that, as an aid to punctuality in train running, loss of time without sufficient cause was subject to "any reasonable fine" that the Superintendent might see fit to inflict. The schedule of prices to be charged for stores makes interesting reading. The locomotive drivers of 1858 would seem to have been at least as good business men as mechanics, and to have had some flair for finance in operating their calling at a profit. It would be interesting to know the monthly or annual financial results of these old-time engine drivers.

Railways' Expenditure on Research

THE British railways normally spend very large sums on research and experiment; an approximate estimate is in the region of £1,000,000 a year. This expenditure includes scientific research proper and also work performed by the railway engineering and traffic departments which comes within true research and experiment. In recent years the railways, through their scientific staffs and laboratories, their membership of various research associations and the Department of Scientific & Industrial Research, and by their subscriptions to special investigations, such as that on soil mechanics, have been able to apply scientific research to a number of their main problems. Research has been of special value in the investigation of maintenance problems. For example, the study of paints and methods of painting has enabled large economies to be made both in the painting of rolling stock and of structures, and this knowledge has been of special importance during the war in saving both labour and materials. Accurate measurements of the effect of rolling stock on permanent way and of the movement of rails and rail joints of different types also help towards the improvement of the permanent way and towards savings in manpower and materials.

Wind-tunnel experiments have been applied to a wide range of problems, including the best means of diminishing the air resistance of trains, the design of locomotives to throw the smoke clear of the driver's line of vision and the design of louvres to improve the ventilation of engine sheds. The cine-camera has been used to make records of the movement of the wheel on the rail so as to determine the best type contour for smooth riding, of the jumping of the wheels in certain types of locomotive when the wheels are slipping at high speeds, and also of the behaviour of electric-train shoes in contact with the conductor rail and the arcing set up thereby. During the war, research has been of great value in finding substitutes for all kinds of materials that are in short supply, and in a variety of A.R.P. problems, such as lighting and ventilation.

Apart from this specialised scientific research, there is work of a more general kind. For example, the terminal work at goods stations has been subjected to exhaustive study and experiment to secure economy and improvement of output. Similarly, before the war the railways appointed shunting and traffic analysis committees to study the locomotive power and staff employed in the marshalling yards and analysed the flows of traffic. This method of analysing the workings resulted in considerable economies in shunting-engine power, and improvements in operating were obtained by arranging through trains to distant destination points, thereby reducing to a minimum the staging of traffic—that is, working from yard to yard. These committees have been continued during the war and have concentrated mainly on traffic-yard analysis, so as to keep a close grip on the ever-changing traffic flows, brought about by the shipping "convoy" system, the increased output from works and factories, and the diversion of traffic from road to rail. The traffic flows are analysed in detail to see whether operating advantages can be obtained by the utilisation of all exchange points and routes.

Perhaps the most remarkable progress due to research and experiment has been in locomotives and rolling stock. The following are examples of the true economies that have been secured:—

Rolling stock.—Standardisation of parts. Replacement of parts rather than repairs on units and dismantling and reassembling on "belt" so as to secure a quicker turn-round and so to reduce the stock of requirements. The streamlining of locomotives. Laboratory research—metals, paints, etc. Concentration of repair work. Improvements in design to reduce the all-in cost (including interest) of supplying engine power. Improvements in manufacturing and other workshop plant and methods—for example, the greater use of electric and oxy-acetylene welding, spray painting, foundry equipment, appliances to reduce manual effort, etc.

Locomotive running.—Mechanical handling of coal and ashes. Improved water troughs to reduce wastage. Softening of water to reduce boiler repairs. Altered layout of sheds to save waste time of stock and thus reduce numbers. Introduction of light passenger units—for example, diesel cars. Introduction of diesel shunting where there are long turns of work at marshalling yards, etc.

Operating.—Replanning of locomotive and train schedules to secure increased use of stock and thus reduce the capital employed. Mechanical carriage washing and cleaning plant.

As a result, between 1923 and 1938 the expenditure of the maintenance of rolling stock was reduced by about 15 per cent. Prices were lower, but there was a 5 per cent. increase in engine miles. The miles run per steam locomotive a year increased from 22,512 in 1923 to 27,210 in 1938, or by 21 per cent. Operating expenditure showed nearly the same degree of improvement as

rolling stock. A table showing the number of locomotives, the engine miles run, and the mileage per engine is set out below:—

ENGINE MILES PER ENGINE

Four Companys

	Engines at end of year	Engine miles	Miles per engine No.	Miles per engine % of 1923
1923	23,879	537,568,776	22,512	100·00
1924	23,935	545,560,637	22,793	101·25
1925	23,850	543,228,269	22,777	101·18
1926	23,678	454,482,413	19,194	85·26
1927	23,638	547,146,522	23,147	102·82
1928	23,298	538,810,157	23,127	102·73
1929	23,090	549,219,914	23,786	105·66
1930	22,519	537,082,142	23,850	105·94
1931	22,099	512,352,661	23,184	102·99
1932	21,286	495,541,816	23,280	103·41
1933	20,807	494,520,521	23,767	105·57
1934	20,369	515,939,755	25,330	112·52
1935	20,165	521,061,803	25,840	114·78
1936	19,817	537,019,920	27,099	120·38
1937	19,679	549,565,361	27,926	124·05
1938	19,577	532,682,966	27,210	120·87
1939	19,504	511,396,643	26,220	116·47
1940	19,475	498,008,241	25,572	113·59
1941	19,600	496,380,343	25,326	112·50
1942	19,812	504,119,467	25,445	113·03

The consumption of coal was reduced by a lesser use per engine mile by 2·4 lb., which equalled 570,000 tons, and averted a further outlay of £500,000.

Civil engineering research and experiment has been continuous. So far as the permanent way is concerned, one of the largest improvements secured has been the introduction of measured shovel packing—the systematic packing of ballast under the sleepers. Endeavours also have been made to design a track requiring less maintenance than the present standard.

Worn crossings in the track are being reconditioned by welding without removing the rail for the purpose. Concrete sleepers are a wartime experiment and extensive tests are being made with these. As to structures, considerable work has been done in welding and the use of pre-cast concrete bridge renewals; there have also been extensive tests of paint materials and with flame cleaning. Investigations have also been made into girder stresses, methods of ventilation, lightweight construction for roofing, soil mechanics concerning foundation problems and the stability of retaining walls on slopes.

Railways and Public Goodwill

ONE outcome of Government control of railways during the war which may have serious repercussions on the future of the railways is not provided for under the control agreement and is comparatively seldom mentioned when that agreement is discussed. This is the likelihood that the conditions forced on the railways by the exigencies of wartime operation may lead to a loss of public goodwill. There can be no doubt that both the travelling and commercial public have suffered grave inconveniences during the war and it is but natural, perhaps, that they should tend to lay the blame for the loss of amenities and facilities at the door of the railways. It is asking a good deal of the man in the street to expect him always to consider the intricacies of Governmental control of the railways or the future of wartime operation which impinge on the particular service he is accustomed to use.

It is clear from correspondence we receive that the discomforts and disabilities endured by railway travellers are by no means confined to this country, but, indeed, appear to be common to all railway systems. In a recent letter from Mr. T. J. Hartigan, Commissioner for the New South Wales Government Railways, he commented on the fact that frequent references had appeared in the press to the conditions existing in New South Wales, and that for some time he had felt that all possible steps should be taken to create a better impression of railway travel, more particularly as to the amenities offered in normal times. In addition to overcrowding of trains, difficulties in providing meals, unavoidable deterioration in punctuality and discourtesy of employees, due to war conditions, the New South Wales Railways have been faced with charges that dishonest employees have accepted bribes to secure accommodation for unscrupulous or impatient travellers. Mr. Hartigan has arranged for some strengthening of the railway inspectorial staff in an effort to stamp out the last-named practice and to inculcate in all employees the need for greater courtesy and consideration. Where serious complaints have been made, it has been arranged for inspectors to make special inquiries, and it has been found often that effective action may be taken to overcome the troubles. As a result, many expressions of appreciation have been received.

The New South Wales Government Railways have set aside substantial amounts in their annual accounts as reserves for rehabilitating the railways, but despite the fact that the railways may be in a position in the post-war period to give accelerated and comfortable travel, it still remains necessary that they should retain the goodwill of the public. Whether the time is propitious for launching a specific campaign to ensure this, to some degree is dependent on the likely duration of hostilities. If embarked on too early it has been thought that there might be difficulties for the continuation of the campaign, but the present time appears opportune for taking steps of this kind. Indeed, with the likely approach of the end of the war in Europe, there can be little doubt that railway users are becoming more, and not less, impatient of shortcomings in travel conditions, and it would be a pity indeed if, at a time when many thoughts are turning towards post-war plans, antipathy to railways based on wartime conditions should be permitted to grow.

Flat-Bottom Versus Bull-Head Track

IT is a matter of common knowledge that British track differs in design from that in use in almost all other countries in the world, in the use of bull-head rails, keyed in chairs, in preference to the flat-bottom rails favoured elsewhere. In railway pioneering days it was an attractive proposition to be able to lay track with no more to transport to the site than rails, dog-spikes, fishplates, and fishbolts, when locally-cut timber could be used for sleepers, whereas the bull-head or the double-head rail required the transport of chairs in addition. Whatever the initial motive, however, with rare exceptions the flat-bottom rail is now the general world standard, though the structure of the modern flat-bottom track for use in main lines carrying fast and heavy traffic has developed into something as complicated as, and certainly as costly as, modern bull-head track. In the United States, for example, the modern main-line flat-bottom sections range in weight from 110 to 152 lb. per yd.; they are carried on heavy steel sleeper-plates, to distribute the weight of the rolling load over the maximum possible area of the sleeper, and so to increase sleeper life; and are held down by a variety of fastenings to sleepers more closely spaced than is customary with the bull-head rail.

For some time past there has been a desire in Great Britain to know more about the relative economics of the two types of rail, and it has been realised that the only means of arriving at a fully-informed decision would be by means of a direct comparison in the track. After tests in 1936, the L.M.S.R. took the first steps in this direction, by laying in 1939 the first British flat-bottom track in fast running main lines, with the 110 lb. per yd. British standard, and, later, the 131 lb. per yd. American Railway Engineering Association (A.R.E.A.) standard rail, both of which have the same width of bottom flange. Last year the L.N.E.R. initiated a similar large-scale experiment, entirely with the 110 lb. B.S. flat-bottom section, and, with track material already purchased or on order, ultimately will have some 32 miles of flat-bottom single track in main-line use on various parts of the system in England and Scotland. In addition, in conjunction with Taylor Bros. (Sandiacre) Limited, a switch and a crossing have been designed, and the first experimental turnout with 110 lb. flat-bottom rail, described and illustrated at page 332, was laid in at Harringay last January.

Compared with the 100 lb. per yd. B.S. bull-head rail (the heaviest bull-head section in use), the 110 lb. B.S. flat-bottom section has the advantage of 41 per cent. increased strength in the vertical plane, and the wide foot gives considerably greater resistance to bending in the horizontal plane than the bull-head rail foot. The flat-bottom track thus has a greater vertical and lateral stiffness than the bull-head, and this is expected to prove of advantage in keeping the track in line, and so in reducing the time and labour expended in maintenance. On the debit side of the account there is the greater liability of the flat-bottom rail to battering of the running surface at the ends, and the higher initial cost due to the heavier weight. Moreover, in the opinion of some engineers there is a greater susceptibility of the flat-bottom section to fracture-producing conditions.

It is obvious that a considerable period of experiment and comparison is necessary before it will be possible to translate into terms of an accurate financial comparison—including first cost, labour, time, and cost in laying and relaying, life of rails and components, scrap values, and costs of repair and maintenance—the relative merits of bull-head and flat-bottom track in British conditions. The L.M.S. and L.N.E. Railways are to be congratulated, however, for their enterprise in initiating these large-scale experiments; and if, as a result, the flat-bottom type of track should prove its superiority, the outcome of the trials is likely to have a profound effect on British permanent way design. The Engineering Departments of the two railways are maintaining close contact, and are exchanging information constantly, so that agreed conclusions as to future standards may be reached on the basis of these experiments.

Statistics of U.S.A. Railways

IN our June 23 issue we explained the wide scope of the duties assigned to the Interstate Commerce Commission of the United States. Since its creation in 1883 as a check on the policy and practices of the railways, the Commission has been entrusted with authority to regulate all branches of transport except air. It has gradually built a strong organisation for watching transport developments and examining new problems as they arise. We have referred more than once in recent articles to the work done by the Bureau of Transport Economics and Statistics of the I.C.C. The Bureau prepares a series of monthly, quarterly and annual statistical reports which have been continued during the war years. The majority of these relate to the railways, but a monthly return of revenues and passengers of motor carriers is published as well as annual statistics of large motor carriers. Quarterly returns are circulated of the revenue and traffic of large carriers by water and of oil-pipeline companies. The American people thus has a picture of the progress of surface transport which has no counterpart in this country. The Bureau also undertakes research into special questions. In the 12 months ended June 30, 1943, it completed six important studies on: (i) fluctuations in railway freight traffic compared with production, 1928-1941; (ii) railway freight rates on anthracite coal, 1929-1942; (iii) freight revenue and value of commodities transported on railways, 1941; (iv) a review of statistics of oil pipelines, 1921-1941; (v) reliability of railway employee accident statistics; and (vi) rail-highway grade-crossing accidents, 1942.

One useful piece of work done by the Bureau is the compilation of an annual comparative statement of operating statistics for the individual Class 1 steam railways. The statement for the year 1942 was the basis of an article on U.S.A. railway operating which appeared in our December 3 issue. We then described the ingenious arrangement of the statistical tables. Another great merit of the I.C.C. reports is that they are circulated while the figures are fresh. There is not the same need for prompt publication in the case of an elaborate annual survey of the "Statistics of Railways in the United States, including also selected data relating to other common carriers (except motor carriers)." The report for 1942, the 56th of these annual surveys, reached this country recently. The contents fill 582 large pages of closely printed matter and are arranged for convenient reference by accountants, comptrollers, and research investigators. General summaries of selected statistics show how railways developed year by year from 1890 to 1942. During these 53 years the miles of railway of all classes grew from 156,000 to 260,000 in 1929 and then declined gradually to 241,000 at the end of 1942. Since they reached a peak of prosperity in 1929, the Americans have abandoned nearly as much road as is open in Great Britain. They have invested additional money, however, in railway road and equipment: at the close of 1942 the amount was over 25¾ billion dollars—more than three times the sum invested fifty years before.

In 1890 the number of operating steam railways was 1,000. By 1942 mergers and working arrangements had reduced the number to 543. Of these operating railways, 45 work over 1,000 miles of road each; together they operate 82 per cent. of the total route mileage and earn 86 per cent. of the aggregate operating revenue. The all-line operating ratio varied from 66 per cent. in 1890 to 73 per cent. in 1914. During the last war the United States government took possession of the railways and their management was so inefficient and uneconomical that in 1920 the operating ratio rose to 94 per cent. An improvement took place as soon as the railways were returned to their owners, but the ratio still stood at 72 per cent. when America entered the present war. In 1942 the efficient handling of record quantities of wartime traffic brought the ratio down to 62 per cent., furnishing a clear proof of the capacity of the railways under private management to cope with the greatest transport emergency in history.

A novel table shows the flow of wagon-load traffic between five territories into which the States were divided for the purposes of an investigation into freight rates and classification. Copies of invoices for all wagon-load traffic originating on all railways on two selected days in May and September, 1942, were analysed by territories of origin and destination and by the five commodity groups:—

(i) Products of Agriculture;
(ii) Animals and Products;
(iii) Products of Mines;
(iv) Products of Forests; and
(v) Manufactures and Miscellaneous.

The I.C.C. has acted wisely in preserving an informative statement prepared for a special purpose and making it public. Its example might be followed profitably on occasion by our Ministry of Transport. We appreciate the advantage of preparing the Railway Returns in the same form each year, but invariably we find use for any additional information given in the general report which precedes the statements.

In the rest of the I.C.C. tables, all-line figures are divided between the three districts to which American railways are customarily assigned:—

Eastern	Roughly, the area east of the Mississippi and north of Washington and St. Louis.
Southern	Area south of the Eastern district and east of the Mississippi.
Western	Area west of the great river.

In some tables separate statistics are given for the eight regions into which the three districts are split:—

District	Region
Eastern	New England.
	Great Lakes.
	Central Eastern.
Southern	Pocahontas.
	Southern.
Western	North Western.
	Central Western.
	South Western.

A case in point is a summary of charges raised for protective services to perishable freight. In 1942 a revenue of $20,600,000 was earned for protection against heat and a further $854,000 for protection against cold. More than half of these receipts accrued in the Central Western Region which embraces the orchards and vineyards of California, but also covers mountainous tracts of Colorado and other western states. The railways serving the region on their long hauls have to guard against the effects of sharp changes in climate and elevation such as our carriers never experience. That is why the air-conditioning of passenger coaches has come to be considered a necessity over there, but would be superfluous in this country except in a few special vehicles like sleeping-cars. One of the great Central Western systems is the Southern Pacific. Its "Sunset Route" from New Orleans to San Francisco, a distance of nearly 2,500 miles, passes from sea level and the tropical heat of New Orleans to a height of 5,000 ft. at Paisano, nearly 1,000 miles to the west. North from San Francisco its "Shasta Route" of 770 miles to Portland also reaches a summit of 5,000 ft. and is frequently blocked by snowdrifts. So advertising agents make as much play with air-conditioning on the crack expresses as they do with the grandeur of the scenery through which the Southern Pacific runs.

Another set of tables, peculiar to America, records details of 87 railways in the hands of receivers or trustees at the end of 1942. These companies represent an investment of 5 billion (U.S.) dollars and operate 67,000 miles of road. Five-sixths of that mileage lies west of the Mississippi where the Chicago, Milwaukee, St. Paul & Pacific works 10,800 miles of road, the Chicago and North Western 8,100, and both the Chicago, Rock Island & Pacific and the Missouri Pacific over 7,000 miles. Trustee procedure was provided for in an amendment to the American Bankruptcy Act, approved in 1933, and apparently does not hamper railway enterprise. With the aid of wartime profits, a number of the more important lines probably will escape from trusteeship soon as the Wabash, operating 2,400 miles in the Great Lakes Region, did in 1942.

The second portion of the volume is mainly composed of an abstract of reports rendered by class 1 steam railways. We are given 586 items for each railway, beginning with "investment in transportation property" and ending with details of "floating equipment." To indicate how exhaustive is the abstract, we may add that "maintenance of way and structures" is split under 65 heads and "maintenance of equipment" needs 36 entries. The whole massive array of statistics is grouped by districts and regions: the names of the individual railways are arranged alphabetically and the figures for a particular company appear on consecutive pages. With this layout any required information can be extracted readily from the tables.

We cannot but admire the achievement of the I.C.C. in preparing this comprehensive report on the results of the American railways in the midst of a great war. It is remarkable that the vast financial transactions, with which the report deals, have been adjusted within little more than a year from the issue of preliminary statistics for 1942. This feat could not have been accomplished without helpful co-operation between the Commission and the Association of American Railroads. It speaks well for the effectiveness of regulated private enterprise. Under government control even abbreviated returns for the railways of Great Britain have not been issued for any war year and we shall not be surprised if the railway companies are still without a final settlement of their accounts for 1939 and 1940 when the first financial arrangement with the State was in force. The contrast in outlook and methods does not strengthen one's faith in any proposals for increasing the extent of government interference with industry after the war.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Transport of Troops by Rail in 1832

London. September 22

To the Editor of the Railway Gazette

Sir,—In the last paragraph of the article on page 253 of your issue of September 15, reference is made to an author who "conceals his identity under the pseudonym 'P. Z.'" There can hardly have been any particular motive for concealment for evidence exists that it was Poenitz (Carl Eduard) and that it was he who wrote the book published in 1842.

The construction of railways for stategical purposes was advocated in Germany as early as 1833 in a work by Harkort (Friedrich Wilhelm), entitled "Die Eisenbahn von Minden nach Köln."

Reference to both, and to many other interesting features which are very relevant in dealing with the future of Germany, are to be found in Edwin A. Pratt's "The Rise of Rail-Power in War and Conquest, 1833-1914" (P. S. King & Son Ltd.).

Chapter XIX, says Pratt, shows how *with the help of railways*, Germany proposed to transform the African continent into an African Empire of her own, and (chapter XX) how she proposed *to employ railways* for the furthering of her aims against Asiatic Turkey, Egypt and India.

Yours faithfully,

R. C. P.

"A Protest at Railway Propaganda"

12, Thornhill Park,
Sunderland. September 19

To the Editor of The Railway Gazette

Sir,—Mr. Philip Spencer, whose letter was published in your September 15 issue, is well qualified to be a Cabinet Minister or a railway General Manager. The advertisement in question *is* superfluous, because if the discomforts of rail travel do not stop people travelling, advertisements will not. Of course, "thousands of people gave railways extra work with holiday travel"; no ordinarily enlightened person could have expected anything else.

Since last summer three well-known but widely-different writers have expressed a same opinion. Last month Ferdinand Tuohy wrote: "The Industrial Health Research Board has warned that boredom and fatigue are increasing. . . It is obvious by now that much absenteeism and lack of vigour derives from inability to get away for a change year after year. . ." In August last year the editor of *The Observer* said: "Summer weather is doubly so in the kitchen and the scullery. To further labour in these quarters do the women return when they have done a day's work in the factory. It is a point on which male politicians are apt to be forgetful. . . . How many . . . realise that holidays at home are no holidays at all for women?" In the same month Vera Brittain was moved to write: "It would be interesting to know how many members of that Ministry [of Transport] possess country cottages and are accustomed to enjoy golfing weekends. Several factors contributed to the holiday-makers' revolt . . . the sudden fall of Mussolini . . . a spontaneous urge to celebrate . . . a long heatwave made the summer stench and airlessness of cities even less endurable than usual . . . for that great majority which inhabits . . . narrow squalid streets; . . . it became known the railway companies would have . . . put on extra trains if authority permitted . . ."

I did not expect Cabinet Ministers to understand all this—their lives are full of change of scene and work and interest, and their travelling is made easy for them—nor the higher railway officials, who do not travel with the common herd but in their private saloons, and who in much have lost touch with the common people and have an outlook very like that of government officials—I do not look for imaginative sympathy in such as they. Nor do I say, though much could be said—whether the discomfort of rail travel was unavoidable.

But (and this is the kernel of my previous letter) the use of the offending design at all shows a lamentable lack of a lively imagination, and to find, even in a magazine devoted to an interest which, I had thought, like Music, Art, and so on, knows no frontiers, the biassed, destructive propaganda which always accompanies war moves me to protest with vigour.

For Mr. Spencer's further enlightenment, Sir Joseph Porter was the gentleman "who always voted at his Party's call, he never thought of thinking for himself at all; he thought so little they rewarded him by making him the Ruler of the Queen's Navee." He is the quintessence of unimaginative officialdom.

If to protest against having our lives ordered by persons of that mentality, and against parrot-like repetition by others of their unenlightened pronouncements "is much ado about nothing," then such my letter was. But I think not.

Your footnote to my letter is a quibble! The design in question appeared also as a poster on station noticeboards, and there is no essential difference in meaning between "a Government poster" and "one issued by Agents for the Minister of War Transport."

Yours sincerely,

G. H. Bartram

[Nevertheless, the signal *was* against holiday travel last summer.—Ed. *R.G.*]

Railway Electrification Pros and Cons

34, Lancaster Road,
Preston,

September 27

To the Editor of The Railway Gazette

Sir,—Some days ago I travelled from Carlisle to Preston; there were, I believe, 14 coaches on the train, and I noticed that heading the train were two of the latest L.M.S.R. 6-coupled express passenger locomotives.

When climbing the gradient up to Shap, the train slowed down to about 35 to 40 m.p.h., as near as I could judge; the gradient was I believe, about 1 in 90, so up this gradient I estimated the total power put out by the two engines to be something like 2,800 h.p.

Had this train been hauled by one electric locomotive, the power required would have been about 2,300 h.p. By double heading, not only was 500 or more h.p. being wasted, but two additional men were required, plus having to stop the train at the summit to uncouple the second locomotive. This, of course, is not new information.

The point I want to make is that if railways are to compete with other forms of transport, 35-40 m.p.h. is not fast enough, even on grades like this. I suggest a minimum of 50 m.p.h., which would bring the h.p. required up to over 3,000. Again we have a right to expect speeds of the order of 100 m.p.h. on the level, and 80-90 up grades of the order of 1 in 300. For a train of 14 coaches, something like 3,600 h.p. is required for both the above conditions.

So I contend that if main-line electrification comes in this country, passenger locomotives should be capable of giving 3,600 h.p. at speeds of 80 m.p.h. Furthermore, outputs of 3,000 h.p. should be obtainable at 50 m.p.h. Only by using locomotives with these outputs can schedule speeds of 80 m.p.h. be obtained on the main lines without the maximum speed exceeding 95 m.p.h.

As the art of electric locomotive design existed 25 years ago, locomotives with the flexibility outlined above would have been considered impracticable, but today such locomotives are possible and the power can be obtained from four driving axles. Even the collection of the current at 1,500 volts only can be overcome.

For passenger work in this country, the case for regeneration has not been proved, in my opinion, as our railway grades are neither steep enough or long enough to warrant it. The question of ultra-high speeds does not affect it, as regeneration on the locomotive would not count appreciably for rapid braking. The case is a bit different for goods work.

As to braking from 100 m.p.h., unless cast-iron brake shoes are discarded for shoes of a material which has a more uniform co-efficient of friction over a wide speed range, including 100 m.p.h. then it looks as though the vacuum system of braking on the coaches will have to be discarded in favour of compressed air, as the vacuum cylinders would have to be very large indeed to give the necessary brake pressure.

As to railway electrification in general, in the past it has been largely the question of economy or not over steam operation which has determined progress of it. I think public amenities should enter more into it. When one stands on a busy station like Preston or New Street, Birmingham, and suddenly a high power locomotive standing near starts to blow off steam from the safety valve, or a heavy goods train puffs smokily through, surely all observers would agree that this state of affairs should be ended once and for all, much as one may admire the majesty of the modern steam locomotive.

I visualise large railway stations of the future with reasonably low ceilings with a modern system of brilliant indirect lighting reflected from a light coloured and clean ceiling, where one can sit at tables on the platform without one's drink getting full of smuts and where you could converse with your friends easily, and without fear of having your ear drum burst. This is all possible with electric traction on our main lines. Branch lines and cross-country lines to be operated by means of railcars, either straight electric or diesel-electric, with high rates of acceleration up to fairly high top speeds, with halts on the outskirts of the towns for suburban dwellers.

Yours faithfully,

H. Charnley, A.M.I.E.E.

The Scrap Heap

This summer 15,000 broken and lost cups were replaced in the L.N.E.R. refreshment-rooms at Manchester London Road and Central Stations.

* * *

"There is no form of land transport so durable as railways, so difficult to put out of action, or so quickly restored. It is but natural, therefore, that an army relies on rail transport, wherever rail transport can be provided, in preference to road or air."—*Sir Leonard Wilson, Chief Commissioner of Railways, Government of India, in a broadcast from the Delhi Station.*

* * *

GUARD MISSED HIS OWN TRAIN

After signalling his driver to start, Albert Hanwell Wilson, a 61-year-old L.M.S.R. guard, of Regent's Street, Watford, missed his own train at Chalk Farm, so he began to walk along the line to the next station, Camden Town. On the way he called to the driver of a light engine to ask if he was going to Camden Town. Before the driver could answer, Wilson crossed towards the engine and was killed by another train coming from the opposite direction. This occurred on Wilson's first day back at work after an illness. A verdict of accidental death was returned at the St. Pancras inquest on September 11.

Locomotive Driving by Contract

Mr. F. M. Binns, of 11, Kirkstall Avenue, Blackpool, Lancashire, has sent us the following copy of an agreement between drivers and the Southern Division of the L.N.W.R. :—

LONDON & NORTH WESTERN RAILWAY
Southern Division
Locomotive Department,
1st day of May, 1858

I, the undersigned, do hereby undertake for and in consideration of the sum of Five Pence per train mile run to be paid to me by the LONDON and NORTH WESTERN RAILWAY COMPANY, to drive an engine working Goods Trains between Rugby and Northampton, or elsewhere, and to provide and pay all wage to my Fireman and Cleaner and to provide the necessary firewood, coke, coal, oil, tallow, tender hose pipes, gauge glasses, tender brake blocks, cotton waste, flax for packing and all small stores of every kind which may be required. Also to repair or pay the cost of repairs to all the following parts, piston packing, slide valves, glands, connecting rod brasses, pumps and valve; to maintain my stock of tools; and to pay for putting in piston and valve springs, lining up all brasses, rods or slide bars, letting together all brasses and straps; making all steam and other joints and putting all the necessary pins, bushes and bolts in the working parts. I also engage to do or render full assistance as far as possible towards whatever may be required to keep the engine in perfect working order, so long as it is under my charge, with the exception of providing such articles as are of iron, brass, copper or steel, or of paying for other labour that may be done as necessary at Wolverton, or otherwise in cases of accident resulting from causes beyond my control.

And I undertake to abide by and attend strictly to all the rules of the Company and to use all means in my power to ensure the punctual arrival of my trains at all Stations; and in case I require assistance I agree to be charged at the rate of Fivepence per mile for every mile assisted; and provided I am required to pilot or assist another train or engine I agree to accept payment for such work at the rate of Fivepence per mile for the miles assisted and half price for empty miles; and I further agree, in the event of losing time in the working of my train without being able to show sufficient cause, or of not using due exertion to keep my time, to subject myself to any reasonable fine that my Superintendent may inflict; and in case my engine should fail on the road from defective Pumps, or any other cause arising from my neglect and another engine should be required to take the train forward, I will subject myself to any reasonable charge my Superintendent may determine; and I do further agree that in case of breakage to any part of my engine, or damage to any Stock, caused by my neglect, I will submit to pay the cost of repairs, or such sum as my Superintendent may direct.

And, lastly, in case I or my Superintendent desire to alter the terms of, or otherwise terminate this Contract, I agree to give or accept from him a Fortnight's Notice in writing; and, in case of difference, I agree that an appeal to the Directors shall be final and conclusive.

The Contract to commence from First day of May 1858.

Witness..... *Signed*.....

M'Corquodale & Co., Printers, London—Works, Newton

PRICES TO BE CHARGED FOR STORES

Coke	at 24s. per ton
Coal	at 12s. 6d. per ton
Oil	at 5d. per pint
Tallow	at 6½d. per pound
Yellow grease	at 2d. per pound
Cotton waste	at 2d. per pound
Firewood	at 6d. per cwt.
Tender hose pipes	at 3s. 6d. per foot
Gauge glasses	at 1s. 2d. each
Tender brake blocks	at 7d. each
Flax for packing	at 6d. per pound
Spun yarn	at 4d. per pound
Cotton wick	at 1s. per pound

* * *

"85 per cent. successful" so often means unsuccessful, just as "90 per cent. agreement" often means disagreement.

* * *

TAILPIECE

(*The L.N.E.R. has distributed to its catering staffs copies of a booklet on the art of tea-making*)

Strange that such difference should be
Twixt one tea and another tea,
Identical in price and packing.
The leaf's the same, the art is lacking.

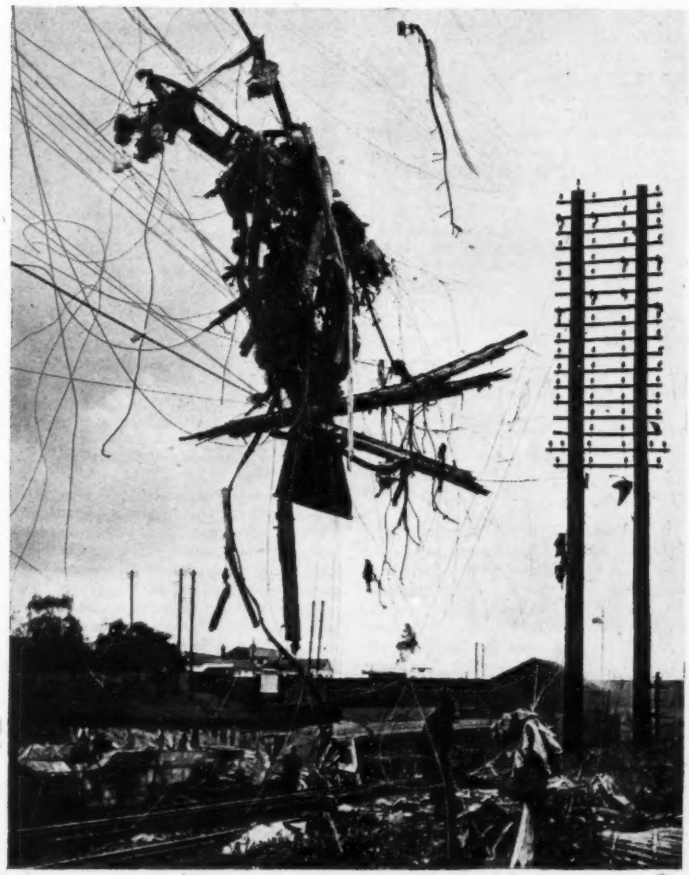
A simple art—the rules are few.
Use boiling water, do not stew,
Add milk the last and sweeten right,
Store strictly, keep utensils bright,

These rules for brewing simply stated
The L.N.E.R. circulated,
And so assured without alloy
The cup that cheers, the traveller's joy.

In station buffets everywhere
The booklet, like the tea, is there,
And staffs compete with right good will
To make the "nice cup" nicer still.

E. C.

Scrap!



Debris from the interior of a Southern Railway train hit by a flying bomb in South London, festooned on the nearby telegraph wires

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

CANADA

Alleged Railway Road-Haulage Monopoly

The Canadian Automotive Transport Association, in a brief presented recently to the Canadian House of Commons Reconstruction Committee asserted that, unless Government limitations were imposed, there was a danger that railways would create a "complete monopoly of road haulage through the establishment of road services; and that the entry of railways, directly or through subsidiaries, into the field of road transport, should be limited, in the public interest, to the extent that they should be permitted to operate road services only as part of a combination of through rail and road traffic. The motor transport industry was unique in that it allowed thousands of individuals to operate their own businesses on a sound basis; and the opportunity to re-establish many who were at present members of the Armed Services would be minimised if the railways were permitted to control, or themselves become, road-service operators on a large scale. Federal legislation to control railway expansion of road traffic should be passed.

The brief also urged that the regulation of interurban road freight carriers should be returned to provincial authorities at the earliest opportunity, without further Federal interference after the war; that surplus motor transport equipment and supplies should be sold by the Government after the war through regular trade channels, at fair prices; that the three-cent Federal petrol tax be removed, with the assurance that such "discriminatory taxes" would not be imposed in the post-war period; that the Federal Government should repeal sections of the Transport Act which permitted railways to enter into individual agreements with consignors concerning charges.

Certain sections of the Act, it was alleged, gave the railways a weapon by which they could use their financial resources to institute "ruinous competition" with road transport.

Road Transport "Singled-out" for Attack

The brief continued by stating that commercial motor vehicle registrations had risen from 9,611 in 1918 to 248,094 in 1943, when the investment in depots and equipment belonging to the owners of those vehicles was estimated at about $500,000,000. Approximately 450,000 persons (nearly three times as many, it was stated, as those employed by all railways in Canada) were employed directly in their operation and maintenance. The Association was in favour of interurban carriers co-ordinating their plans with those of other industries which made submissions to the Reconstruction Committee, but "noted with regret" that the railways and railway labour unions had seen fit, in their briefs, to try to side-track the committee, and the public, by singling out the road-haulage industry for special and unwarranted attack. It was contended that statements to the effect that provincial governments had permitted the use of highways without ensuring that commercial vehicles were charged their fair share of the costs had been "disproved." The average efficient lorry operator, it was said, had paid 12·17 per cent. of his gross revenue in taxes last year, yet railway statistics for 1942 indicated that the average paid by all Canadian railways in that year had been 5·04 per cent. The railways had contended that motor transport should be regulated and controlled as a service both complementary and supplementary to railway service, but the Automotive Association thought that such regulation should be influenced solely by the public interest. The motor transport industry was in favour of co-operating with the railways to co-ordinate rail and road services, but such a scheme should be based on equality of direction; co-ordination, to be successful, must be free from domination by any of the parties.

UNITED STATES

More Radio Tests on Trains

Under an experimental licence granted by the Federal Communications Commission, the Bendix Aviation Corporation recently provided an ultra-high frequency two-way radio telephone on the locomotive and brake van of a freight train of the Atchison, Topeka and Santa Fe Railway System, which was making the through journey of 2,200 miles between Bakersfield, California, and Chicago. Having started from Bakersfield with 70 bogie wagons, the train grew until 96 wagons separated locomotive from brake van; yet communication, even over the mountain districts where curvature is frequent and severe, was maintained perfectly. Further installations will depend on the allocation of high-frequency wavelengths by the Federal Communications Commission and on the availability of apparatus.

On the Chicago, Rock Island & Pacific Railway, radio was put to practical use in directing train movements after a severe storm had broken down telegraph and telephone lines between Colby and Selden, Kansas. Previously the F.C.C. had granted the railway a temporary permit to install and operate radio equipment for use in the control of trains, and had assigned a wavelength in the 30 megacycle band. On the interruption of communication, radio equipment was sent from Chicago to the storm area, and effectively bridged the 30-mile gap. The company is now receiving radio equipment to be used for communication between the yardmaster and shunting locomotives in the Blue Island, Illinois, freight yards; and it is planning, like the Denver & Rio Grande Western and Atchison, Topeka & Santa Fe systems, to use that type of communication between the front and rear ends of freight trains on the move.

Passenger Rolling Stock

The largest order for passenger rolling stock placed in the United States for many years is for the New York Central System, and comprises 300 vehicles. Of these, 153 are to be built by the Pullman-Standard Car Manufacturing Company, 127 by the Edward G. Budd Manufacturing Company, and 20 by the American Car & Foundry Company. The order is mainly for chair cars with individual reserved seats, but includes various types. Authorisation for this construction, however, has not yet been received from the War Production Board.

The Missouri Pacific Railroad, which for some time has been awaiting delivery of six streamline passenger carriages from the Edward G. Budd Manufacturing Company (delivery of which has been held up by the W.P.B.), has rebuilt and refurnished five conventional all-steel vehicles for service in the "Colorado Eagle" streamliner between Chicago and Denver. They have been fitted with streamline skirtings, roller bearings, tight-lock couplers, twin cushion draft gear, and electro-pneumatic brakes.

Various orders for passenger stock have been the subject of inquiry, or are pending, subject to W.P.B. authority. These include orders for 15 coaches, six dining cars and four passenger-baggage coaches for the Seaboard Railway; 14 streamline carriages for the Pere Marquette Railway (a new development for this line); four coaches, two dining cars, two mail-baggage vans and two baggage-dormitory cars for the Denver & Rio Grande Western Railroad; and 50 coaches for the Boston & Maine Railroad. The Louisville & Nashville Railroad has ordered 20 coaches, four dining cars, and four tavern-lounge cars from the American Car & Foundry Company.

INDIA

The Future of Indian Railways

In addressing members of the Institution of Engineers (India) at New Delhi recently, Sir Lakshmipati Misra, Engineering Member, Railway Board, said there were persons who looked on the basic plan for the post-war development of railways (to cost Rs. 319 crores) as intensely disappointing, and scoffed at the Railway Board's timidity and lack of imagination. He emphasised that, after all, a period of seven years was only a wink in the life of a nation, and that to step-up the scheme, if found necessary, would be easy; but over-capitalisation would convert the railways into a white elephant for at least another 25 years; whatever one's ideals or ambitions, the railways must remain self-supporting. For the first seven years of the post-war period, one step was enough for him. At the end of that period, they would be in a better position to realise the effects of the developments now planned by the Government for raising the standard of living in India. If those schemes materialised, it would be easy to step-up railway schemes. To commit themselves to huge expenditure on what was a purely commercial organisation would be to deliver a blow to the railways from which they might not recover for a long time.

The basic plan, he explained, tackled three aspects: rehabilitation, improvement of organisation, and developments. Rehabilitation consisted in the repair and replacement of workshop machinery, locomotives, wagons, coaches, and permanent way, and in the replacement of dismantled branch lines which could fit into the road plan of national highways and provincial arteries. Improvement in organisation referred to the evolution of a rates structure in keeping with post-war requirements, reduction in the number of classes in trains, and development of staff welfare. Developments envisaged provision of special amenities for third class passengers at stations and in trains; establishment of workshops for the building of locomotives; extension of the activities of railways; absorption of demobilised personnel by the railway services; and financing the construction and maintenance of lines in undeveloped areas.

Replying to questions Sir Lakshmipati said that the broad and metre gauge railways had come to stay in India, and that he wanted the railways to be free to compete with other transport. If airways were to be operated by private agencies instead of by the Government, the railways should be allowed to operate their own air transport services as well.

Carrier Telephony in Railway Service

Summary of discussion at a meeting of the Institution of Railway Signal Engineers

AT a meeting of the Institution of Railway Signal Engineers held in London on September 27, with the President, Major R. F. Morkill in the chair, a paper entitled "The application of carrier telephony to British railway trunk-line communications" was read by Mr. W. Thomson, B.Sc., A.M.I.E.E.; lantern slides were shown. The speaker dealt with the growth of present systems, beginning with the difficulties encountered in the early years of telephone engineering, the use of induction coils and loading, the influence of the weather and use of cabled circuits. The change in the position produced by the introduction of the thermionic valve, with increased range of service, was described, with the effects of amplifying, leading to a discussion of the features of the carrier method and its remarkable contribution to the improvement of communication systems generally. Mr. Thomson also discussed the question of power supply, the use of batteries and stand-by plant, circuit transposition and the problems arising from connections between open line wires and cabled sections of route. He also made reference to teleprinter working and stressed the fact that telegraphy and telephony were complementary and had each their field of usefulness in railway working.

Mr. A. Moss, L.N.E.R., opened the discussion and referred to the question of the economy to be obtained from carrier operation. Some difficulty had arisen from the fact that they had been unable to visualise exactly what future requirements or developments would be. The immediate traffic conditions had been met, and later others had come into effect and changes had had to be made which, with better knowledge, might have been allowed for, with consequent savings. It was necessary to have a comprehensive plan at the outset. Good line construction was important. Unfortunately on the railway it was not always possible to get what they wanted, and they had to make the best of awkward conditions. Special arrangements were called for near aerodromes and at crossings with power lines. The question of the best frequency to use was also of great importance and interest.

Mr. J. R. Edwards, L.M.S.R., spoke of the stability and efficiency of the carrier system, evidenced by their experience of recent years. He was interested in equipment which was being used on the American railways, specially designed to be compact and light in weight. Adequate telephone facilities were essential in war time; there had been some limitation on the use of the telephone, but after the war it would be necessary to encourage its employment to a greater extent for public business. He was inclined to be sceptical, from his experience of circuit characteristics, of the possibilities of the 12-channel system for railways. Crossings with power lines raised some technical problems and on some routes there were many crossings now. It was essential to maintain trunk communication at the highest pitch of efficient transmission. Cost was an important item. Short sections of carrier working would not be economical. He suggested it might be possible to develop a 6-channel equipment from the details used with the 12-channel type. There would be a demand, he thought, for that equipment, could it be produced.

Mr. R. P. Quelch, G.W.R., who had been associated with the first railway developments of the carrier system, spoke of the early interest taken by his company in communication between a moving train and stations, and although success was achieved, it was thought the public demand for such a service would be very small. The work paved the way, however, for the later development of the carrier system on the line, beginning with a Reading to Swindon circuit. In conjunction with the telephone industry, important advances were made and by-pass equipment enabled the working to cover the Swindon-Paddington section. The subsequent progress had been remarkable and brought excellent results. From using 3 carrier routes in 1935 they had extended the working so that they would soon have 40 in use, some three, some single channel.

Mr. J. H. Fraser, L.N.E.R., thought that the railway grouping had had something to do with the advance made by carrier working on our railways. The need for being able to speak over an entire group had much enlarged the demand on the communications system and forced them to institute new measures. They now had to be able to speak all over a very large area. This was only possible with the aid of carrier apparatus. In railway working they had difficulties of their own to contend with and the lines altered their electrical characteristics with the passing of time. This and other factors made railway officers conservatively minded. Open lines had the advantage that you could often see when something was wrong. It was absolutely necessary to have first-class test facilities.

Mr. A. W. Woodbridge, G.W.R., dwelt on the difficulties created by the insertion of sections of cables. They found that problems arose in making the actual connection between the cable and pole line sections. The leads down the poles, often carrying a heavy weight now, offered some problems; they were trying polythene multi-pair twisted cables. The matter was aggravated by having many 3-channel systems on the pole route. They had sections with four 3-channel systems running parallel for 40 miles. The co-axial cable was a solution, but it was beyond the financial ability of the railways to adopt it. The carrier system had saved them from having to rebuild pole routes that were full. With it they could work long circuits not practicable before. Mr. Woodbridge referred to the possibilities opened up for applying carrier to signalling circuits proper. Great savings in wiring might be realised.

Mr. H. H. Dyer, L.M.S.R., Vice-President of the Institution, gave some details of the early work done in this field on the former Midland Railway and the various difficulties encountered. He had not found the power supplies to be 100 per cent. efficient and was strongly in favour of providing adequate stand-by equipment to cope with emergencies.

Mr. S. Barrs, L.N.E.R., spoke of the problems arising when routes contained open wires and cabled lengths, and the use of volume limiters and repeaters. He had some doubts on the usefulness of the latter.

Mr. W. Thomson replied to the points raised, and, on the proposition of the President, was accorded a hearty vote of thanks. The date of the next meeting is not yet fixed but it is expected to be in November.

Experimental 0-10-0 Tender Locomotive in Sierra Leone

IN the course of a brief account of wartime locomotive building in Sierra Leone, published on page 23 of our July 7 issue, we remarked that two standard types had been converted successfully to enable them to haul longer trains of goods wagons, without exceeding the maximum permissible axle load of 5 tons on the 30-lb. rails. One of the two types thus produced was stated to be a 10-coupled tank engine. This has since proved to be wrong, as the product of the rebuilding in question was an 0-10-0 tender engine, and the word "tender" was wrongly transmitted as "tank" in the communication from Sierra Leone. Mr. W. Venner, A.M.I.Mech.E., A.M.I.Loco.E., Chief Mechanical Engineer, Sierra Leone Government Railway, who is at present on leave in this country, has now supplied us with the following further details regarding this interesting conversion.

The early tender locomotives supplied to the Sierra Leone Government Railway were of 4-8-0 wheel arrangement, with two 13-in. dia. cylinders. In practice it was found that the locomotives appeared to be "over cylindered" and were susceptible to excessive wheel slip. Steps were taken many years ago to eliminate this undesirable feature by fitting cylinder liners and reducing the size of the cylinders to 12-in. dia. Tender locomotives of similar design subsequently supplied to the Sierra Leone Railway were fitted with 12-in. cylinders.

In an investigation to improve the haulage capacity, an experiment was undertaken with one of the early tender locomotives, the cylinders of which were restored to their original bore by the removal of the liners, and a fifth pair of coupled wheels was added. This involved radical alterations to the front end of the engine and the removal of the complete bogie, so that the wheel arrangement became 0-10-0. The frames at the front end of the locomotive were shortened by 18 in., and the buffer beam was brought back so that it was almost in line with the smokebox front. The combined smokebox bottom and frame stretcher casting between the cylinders was reduced in weight by the removal of the top bogie centre pivot and the cutting away of surplus metal.

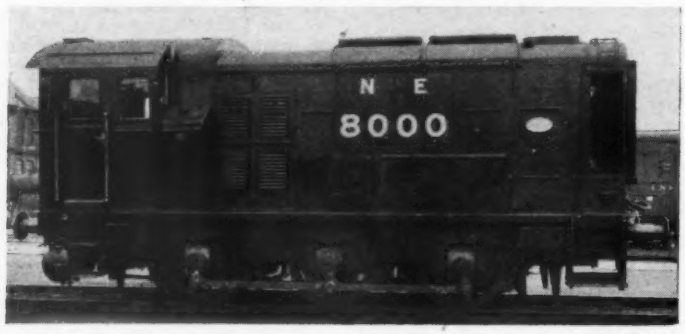
An additional pair of coupled wheels was fitted between the original leading wheels and the cylinders by fitting to the frames patch plates and make up plates to receive the extra pair of axlebox horns, spring gear, etc. It was necessary to alter the sanding gear at the front end so as to serve the new leading wheels, and sandboxes, shaped to suit the sides of the smokebox, were fitted on the platforms above the cylinders. At the same time sanding apparatus was fitted to the driving wheels, and the gear so arranged that the sanding gear to the new leading wheels and driving wheels was coupled together and operated by a single lever mounted in the cab by the side of the reversing gear wheel. Sanding gear was also fitted to the trailing wheels for use when the engine was travelling tender first.

Slight alterations were necessary to the

(*Continued on page* 330)

Diesel-Electric Shunting Locomotives, L.N.E.R.

Built at Doncaster Works and powered by equipment supplied by the English Electric Co. Ltd.



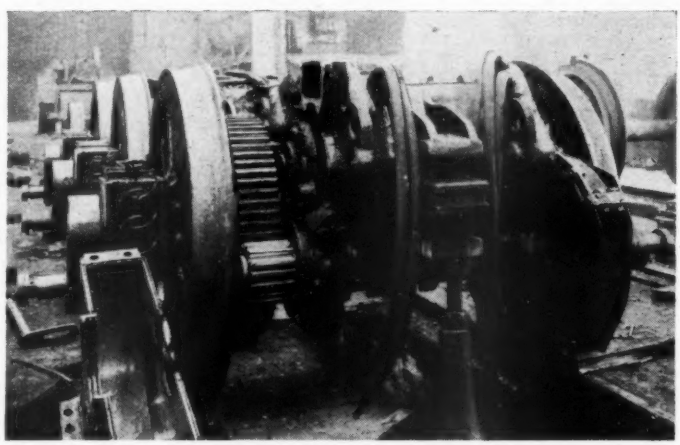
DURING recent years the L.M.S.R. has obtained considerable experience with diesel-electric shunting locomotives and has found that this type of shunting locomotive has many advantages. In the opinion of the L.N.E.R., the 350-b.h.p. diesel engine has established its capacity to do all the work of a normal shunting yard in this country, and the company decided recently to build four diesel-electric shunting locomotives of this capacity at its Doncaster Works; the diesel-electric equipment is being supplied by the English Electric Co. Ltd. Some of these locomotives are now running. In nearly every respect the diesel-electric equipment is standard with that in the latest L.M.S.R. locomotive, and the mechanical parts of the locomotive closely follow those in use on the L.M.S.R. in outline, but incorporate many L.N.E.R. standard details.

The new L.N.E.R. locomotives embody one new feature, as, in addition to performing their normal shunting duties, provision has been made to enable them to act as mobile power stations. For this purpose the main generator has been provided with a double-wound armature, which enables an industrial supply of approximately 200 kW. to be obtained from the diesel-generator set on either a 2-wire or 3-wire system at 500 volts or 250 volts respectively. In the event of one of the company's works or pumping stations being put out of commission, the locomotive can be run, or towed, to the site, and cables connected to the power-supply panel mounted on the backplate of the driver's cab, and, after the necessary change-over switches have been thrown over to their correct position, power can be supplied to the works, through two circuit breakers which are mounted also on the power-supply panel. The locomotives weigh 51 tons in working order, and a starting tractive effort of 32,000 lb. can be obtained, which will be maintained up to 2 m.p.h.; the maximum speed is 20 m.p.h.

The diesel engine is rated to give 350 b.h.p. at 680 r.p.m. and it is mounted with three-point suspension in a frame carried on three pairs of wheels coupled by side rods. The diesel engine is directly coupled to a generator and drives the auxiliaries—compressor, exciter-blower and radiator fan—by belts. The generator supplies two traction motors with a voltage which varies up to a maximum of about 600 volts, and each motor drives one axle through double-reduction spur gearing. The speed of the locomotive is controlled partly by variation of the generator field and partly by varying the engine speed by altering the supply of fuel. The characteristic of the compound-wound generator and the setting of the fuel rack prevents overloading of the engine and a chain-driven governor keeps the engine speed within the range set by the driver's controller. Oil-immersed filters clean all the air used by the engine and for ventilating the generator and traction motors. All the engine lubricating oil passes through a magnetic filter and some of it is by-passed continually through a chemical filter where impurities are absorbed. A thermostatic valve by-passes the engine-cooling water until the temperature of the water is high enough for it to be cooled by the radiator.

In winter, the fully-enclosed driver's cab is heated by three radiators connected with the engine-cooling system. A "dead-man" treadle device is incorporated in the control cubicle so that the motor contactors will be opened and the brake applied if the driver fails to keep the pedal depressed. There is a delay action so that he can move across from one side of the cab to the other. Protective devices prevent the engine running if the lubricating-oil pressure is too low, and these open also the motor contactors if there is an overload or an earth fault on the motors or generator, or a failure of main reservoir air pressure. If the engine shuts down, a relay prevents the battery discharging through the exciter armature, and if the battery should fail completely, the engine can be started by another locomotive pushing for a few yards. In such an event, an emergency switch connects motors and generator so that their normal functions are reversed until mechanical power from the generator rotates the engine up to firing speed.

To test these locomotives they will all be sent to the same marshalling yard, where special maintenance facilities will be provided. It is hoped they will be able to go into service for two weeks continuously, before returning for a few hours' inspection and maintenance at the running shed.



Driving axle showing traction motor with double-reduction gear

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Experimental 0-10-0 Tender Locomotive in Sierra Leone—(*Concluded from page* 329)

valve motion, the slidebar and motion plates, and piston rod stuffing boxes in order to obtain necessary clearances for the additional coupling rods fitted between the new leading wheels and the original ones (now the first pair of intermediate wheels).

Full flanges were provided on the leading and trailing coupled wheel tyres, but the drivers and the first and second pairs of intermediate wheel tyres were given thin flanges. No side play was allowed on the leading and driving coupled wheel axleboxes, but the axleboxes of the first and second pairs of intermediate wheels, and of the trailing wheels, were given $\frac{1}{16}$ in., $\frac{1}{16}$ in., and $\frac{1}{8}$ in. sideplay respectively. Corresponding sideplay was allowed on the coupling rod bushes.

It was found that the converted locomotive easily negotiated the 5-chain curves which occur at frequent intervals throughout the Sierra Leone Railway system without showing signs of undue wear on the tyre flanges or axlebox wheel boss faces.

The water capacity of the tender was increased by fitting a new tank one foot deeper than the original.

As a result of this conversion, the performance of this particular locomotive has been improved considerably. It is now capable of hauling loads of 180 tons, compared with the rated load of 120 tons for the other tender locomotives, an increase of 50 per cent.

German Railway Recreation Train

Conveying social amenities to railwaymen in sparsely-populated areas

A SPECIAL recreation train, provided by the German State Railway for the entertainment of railwaymen serving in lonely places in occupied Poland and Russia, is of interest on account both of the many new features it contains and of the possibilities it appears to offer in peacetime, particularly as a means of bringing a measure of social life and entertainment to railwaymen in sparsely populated areas.

According to the German official description of the train, its origin lay in a desire to provide some means of recreation for railwaymen in small groups at lonely outposts who, by the nature of their duties, could not participate in the facilities provided for railwaymen at the larger centres, or by the army welfare organisation. In the first experiments, a railway film unit, with a portable talking film apparatus, was sent on tour. However, its work was so restricted by the absence of electricity and of rooms for showing the films at many of the places to be visited, and by technical reproduction difficulties, that this idea was abandoned and arrangements were made to fit up a special self-contained recreation train.

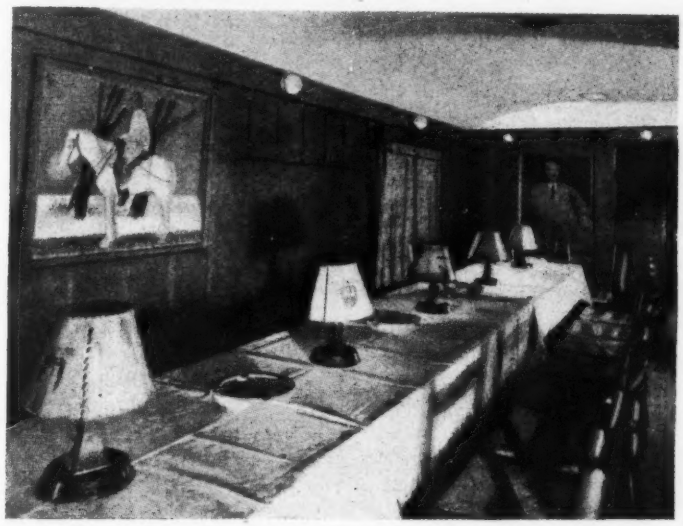
This train consists of two large ex-Polish bogie vans of modern construction. One was converted to form a combined social and cinema room, and the other fitted with a generator room and living accommodation for the train staff. The train is moved on every day from the place where the last show was given to that at which the next is to take place, and is attached to ordinary goods or service trains, so that special locomotive power is not required.

As it was the intention to combine film exhibition with an "at home" at which music, beer, and cigarettes would be provided, the combined social-cinema room, which occupies the entire coach, was specially fitted up accordingly, and attractively decorated and furnished, with the object of creating the atmosphere of a German country inn or beer-hall. The screen is across one end, and the seats, which consist of individual movable chairs, are arranged on each side of a long table down the centre of the coach. The walls are panelled in dark wood, the chairs rush-plaited, and the table linen blue. On the table are electric lamps with shades decorated with coats-of-arms. Paintings loaned from the German Art Exhibition in Munich are hung on the walls. A special clothes cupboard, in which wet clothes can be left and dried, is provided to meet the needs of men who may have had to walk long distances to get to the train.

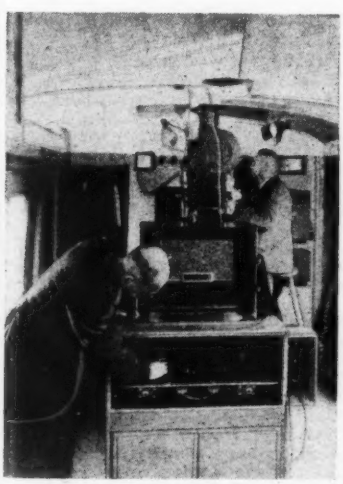
The generator room contains the electric power plant and facilities for routine maintenance work. The projection room is fitted up in accordance with modern practice, and with a projector capable of taking reels up to 3,000 ft. in length, so that the latest feature films from the ordinary cinemas can be shown. Gramophones, radio, and a microphone are also installed, and connected with loud speakers in the cinema, so that music can be reproduced and the atmosphere for a thoroughly enjoyable evening created.

Every German railwayman in an area about to be visited by the train is sent a striking invitation card, illustrated with a cartoon of a very old locomotive drawing a house on wheels, telling him that the recreation train is bringing him a comfortable meeting room with films and music, and that beer and cigarettes will be provided, and that it is up to him to bring a cheerful disposition and good humour so as to ensure an enjoyable evening. A printed programme bill is affixed to the outside of the coach to help to create the atmosphere of a cinema.

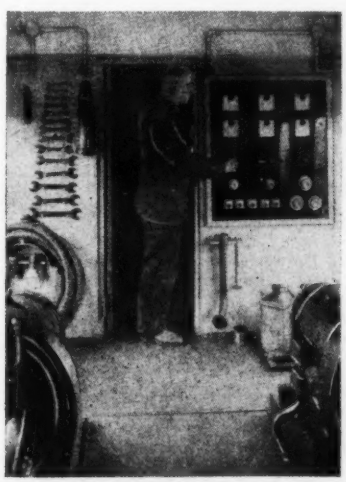
Up to February, 1944, when the train had been in service 2½ years, some 28,000 railwaymen had been entertained, and the Germans claim that the train had been well received and much appreciated by the men.



Club room and film theatre in recreation train



Film projection room



Generator compartment

Invitation card issued to every railwayman in an area visited by the train

Flat-Bottom Track in Great Britain—I

Trials made by the L.N.E.R. with 110 lb. per yd. flat-bottom track in main lines

WITH rare exceptions, the railways of countries other than Great Britain and Ireland have remained faithful in their allegiance to flat-bottom track, and some (such as original French State Railways, now the Western Region of the French National Railways), though originally laid with bull-head rails, have since changed to the flat-bottom section. Great Britain, on the other hand, has continued in its exclusive use of the bull-head rail; and while the weight of flat-bottom sections, particularly in the United States, has been advancing to as much as 110, 131, and even 152 lb. per yd., the bull-head section in Great Britain still remains stationary at 95 lb. per yd., the experience of a decade or two with 100-lb. rails having been followed by a reversion to the 95-lb. section.

What is common knowledge as to the relative advantages of the two types of track is discussed in an editorial article on p. 324, but little or no definite information has been available hitherto on which a financial comparison could be based, taking into consideration all the complicated questions of initial cost, maintenance cost, life, and scrap value of rails and components. Such information can be secured only by a direct comparison in the track of the two sections. Certain formidable problems had to be faced in a change-over from bull-head to flat-bottom track, but in 1936 the London Midland & Scottish Railway decided to make the first flat-bottom trial in fast-running British main lines, with the 110-lb. per yd. British standard flat-bottom section, of which some miles have been laid on various sections of the main lines in England and Scotland. This was followed by the laying of some miles of 131 lb. per yd. flat-bottom rails of the American Railway Engineering Association (A.R.E.A.) standard section.

In 1943 the London & North Eastern Railway initiated a similar large-scale experiment, entirely with 110-lb. B.S. flat-bottom rails, of which several lengths have been laid. Trial stretches of plain line already laid and the dates of installation are as follow:—

On the Edinburgh & Glasgow Main Line: Between Lenzie and Bishopbriggs, down line ¼ mile laid, July, 1939.

On the East Coast Main Line: Between Darlington and Aycliffe, down line ¼ mile laid, July, 1943. Between Essendine and Little Bytham, up line 1 mile laid, October, 1943, and a further ¼ mile in July, 1944. In addition, between Temple Hirst and Selby, a total of 3¼ miles has been laid this summer in the up and down main lines.

One of the most interesting is in the up main line between Essendine and Little Bytham, on the stretch of track over which most of the principal L.N.E.R. speed records have been made, including the 126 m.p.h. attained by the "A4" Pacific locomotive *Mallard* in 1938. Additional 110-lb. rails and components are now on order, and it is the ultimate intention to extend this L.N.E.R. trial to some 32 single track miles. Further, 110-lb. section switches and crossings have now been designed, and a turnout of this section, which was brought into use last January at Harringay, L.N.E.R., is the first running-line 110-lb. switch-and-crossing work to be fabricated for British service. It is to be followed by other 110-lb. switches and crossings in fast-running tracks.

The 110-lb. British Standard flat-bottom rail is 6¼ in. high, and has a width of 6 in. across the flange; the upper part of the web has parallel sides, and is 19/32 in. thick, but from the centre the web-sides taper out towards the base at a radius of 15 in. The fishing angle under the head is 1 in 3, and the fishing angle of the foot is 1 in 6. The 110 lb. per yd. flat-bottom rails in use on the L.N.E.R. have been rolled by Colvilles Limited, at the Glengarnock Works, Ayrshire, from open-hearth basic steel of the normal B.S. medium manganese composition, controlled-cooled, in 60-ft. lengths. The same company has supplied the fishplates and also the steel baseplates which are being used on certain of the trial sections. The latter are of the double-shoulder type, with shallow ribs on the underside, longitudinally of the track, which engage with grooves cut in the sleepers, and help to resist lateral thrusts on the rails, particularly on curves. Cast iron baseplates of the same type, but

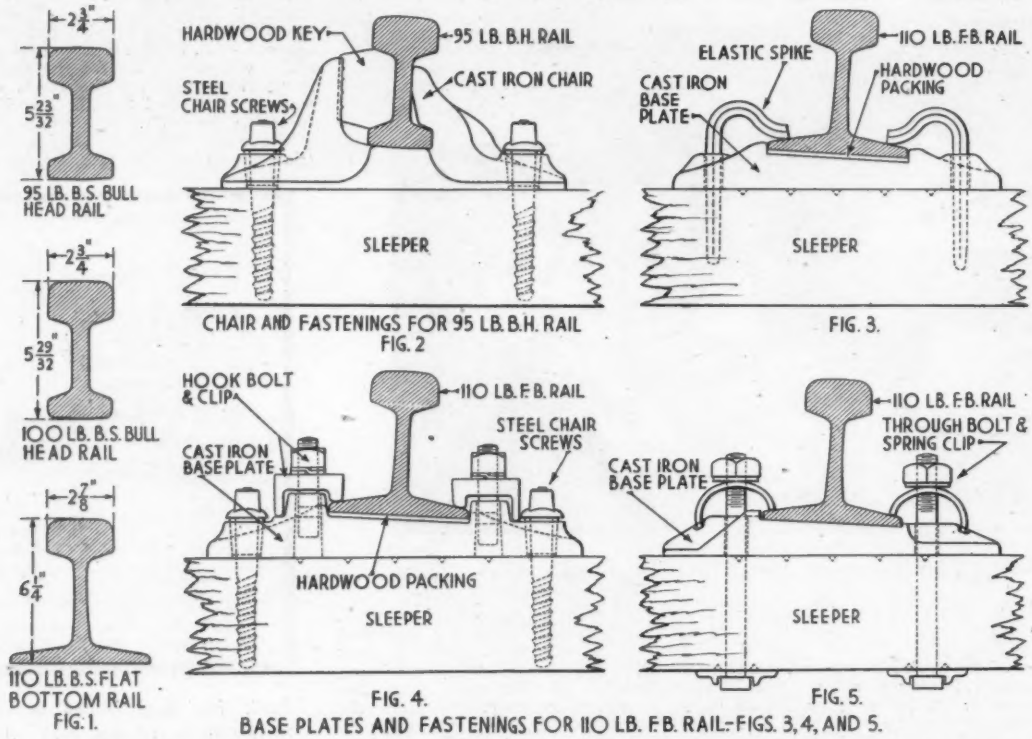
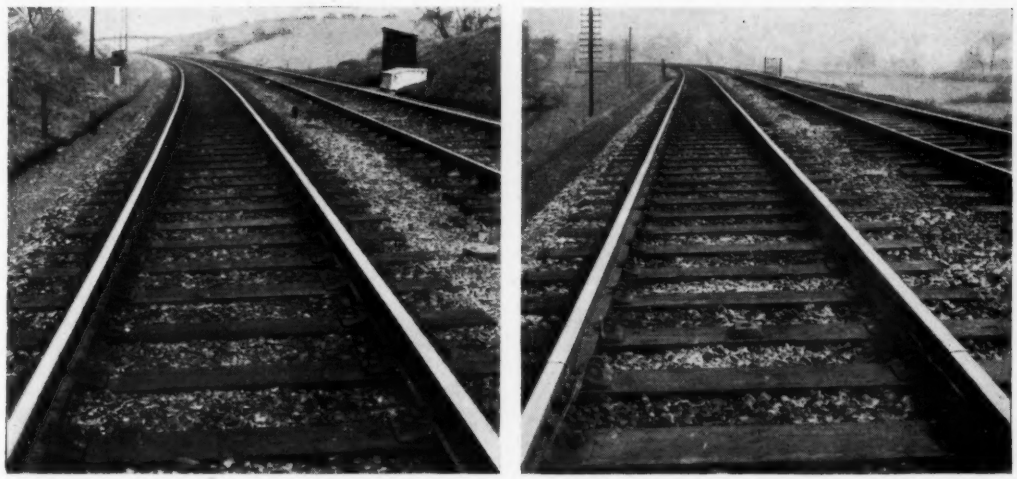


Fig. 1—Three types of rail. Fig. 2—Ordinary method of supporting B.-H. rail in cast-iron chairs fastened to sleeper by three screws. Fig. 3—F.-B. rail with elastic spikes and cast-iron baseplate. Fig. 4—F.-B. rail and cast-iron baseplate (separately fastened to sleeper with three screws) with hook bolts and clips. Fig. 5—F.-B. rail and cast-iron baseplate with spring clip and through bolt

Bull-head and flat-bottom track



Flat-bottom track at Aycliffe, L.N.E.R., fastened (left) with hook bolts and clips, and (right) with elastic spikes. The baseplates are cast iron in both cases

without the ribs, have also been tried. The fastenings used with these base plates are steel elastic spikes supplied by the Elastic Rail Spike Co. Ltd.; three are driven to a plate, two on the gauge side and one on the outer side of the rail. A certain proportion of the plates has been punched with six holes, three in a line on each side of the rail; the purpose is that if, after a lapse of years, it should be desired to re-spike any length of track, three new spikes can be driven in parts of the sleeper unaffected by the previous spike-holes. After re-spiking, there will be one good spike on the gauge side of the rail, and two on the outer side. The elastic spikes are manufactured from quenched and tempered silico-manganese steel. Care is taken in driving that the spike shall exert a predetermined pressure on the rail-foot, so allowing a measure of resilience in the rail-holding which is regarded as beneficial.

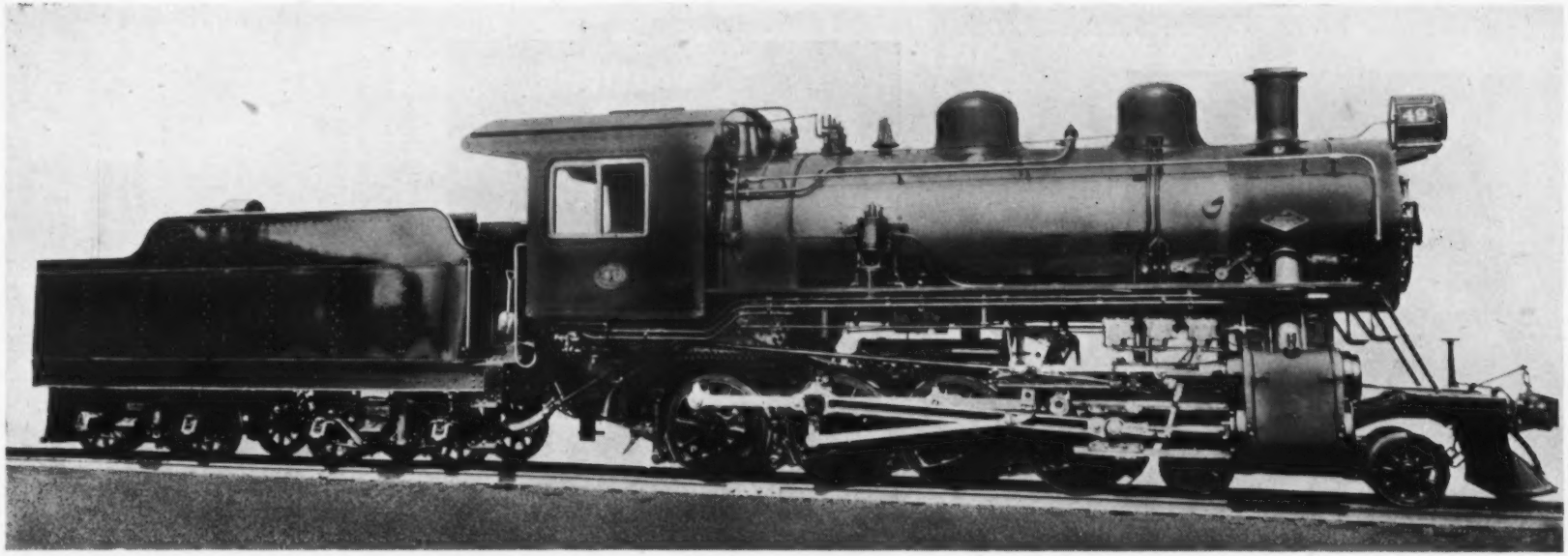
Close-up view of flat-bottom rails laid with steel baseplates and elastic spikes

In addition to the steel baseplates, a proportion of the L.N.E.R. flat-bottom track is laid with cast-iron baseplates supplied by Taylor Bros. (Sandiacre) Limited. These are of two types; one, similar to the steel plate, is for use with elastic spikes, and the other, a heavier type of plate, is used in conjunction with a pair of clips and hookbolts, one on each side of the rail on the centre-line of the plate. The head of the hook-bolt engages in a recess in the base-plate, and the nut, screwed from above the clip, presses the lower edges of the clip into contact with both the rail-foot and the plate. Two types of clip are in use, one of malleable cast iron, supplied by Jonas Wells Limited, of Keighley, and the other, of slightly heavier section, cast from high-duty cast iron by the Stanton Ironworks Co. Ltd., at its Holwell Works. These base-plates are secured to the sleepers with standard chair-screws. A third type of fastening proposed for trial is a curved clip of spring steel, of inverted "U" shape, secured by a bolt which passes through the sleeper; the nut at the upper end of the bolt presses on the top of the clip, holding the two lower edges of the clip in contact with the rail and baseplate respectively. This type of fastening in a measure combines the resilience of the spike with the solid holding power of the clip. Near the joints with the 110-lb. flat-bottom rails, the use of 20-in. fishplates has necessitated a little variation—from that normally adopted with 95-lb. bull-head rails—in the sleeper spacing.

Flat-bottom rails, joint baseplate, with hook bolt and clip fastenings, and four-bolt fishplate at Aycliffe, L.N.E.R. Note the eight screws separately fastening the baseplate to the two sleepers, and the completely-supported joint

(*To be continued*)

THE MAIDSTONE RAILWAY CENTENARY EXHIBITION.—The centenary exhibition arranged by the Southern Railway in the Bentlif Gallery of the Maidstone Museum, to which we referred last week (pages 298 and 317) is remaining open until October 8.



General view of one of the six 4-8-0 locomotives constructed for the Jamaica Government Railway by the Canadian Car & Foundry Co. Ltd. (see our issue of February 4 last). The contract, placed by the Jamaica Government, was to the inspection of the Canadian Pacific Railway

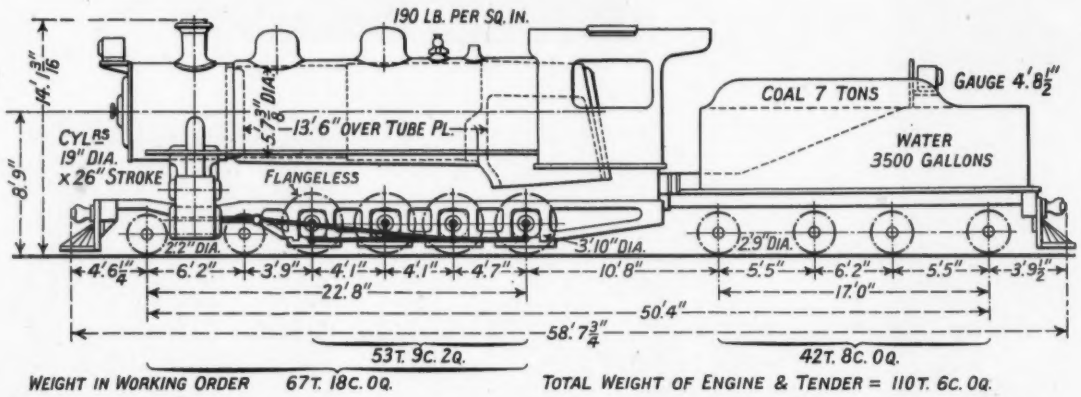


Diagram showing the principal dimensions and weights of the locomotive, and the tender capacities

CANADIAN-BUILT LOCOMOTIVE FOR JAMAICA GOVERNMENT RAILWAY

RAILWAY NEWS SECTION

PERSONAL

Mr. W. A. Pickwoad, O.B.E., M.Inst.T., General Manager (Bolivian Section), Antofagasta (Chili) & Bolivia Railway, has been appointed General Manager of the Central Argentine Railway as from November 1.

Mr. C. W. H. Harrison, Director, Publicity & Travel Bureau, London, South African Railways & Harbours, who, as recorded in our September 29 issue, has been appointed Assistant Manager, Publicity & Travel Department, Johannesburg, was born in 1894 in South Africa, and was educated in Durban and Pretoria.

Mr. C. W. H. Harrison

Appointed Assistant Manager, Publicity & Travel Department, South African Railways & Harbours

He joined the South African Railways & Harbours service at the latter centre in 1910, and trained in various capacities at outside depots in the Transvaal and Cape Province; he later qualified and acted as Stationmaster. In 1913 he was attached to the Divisional Superintendent's Office at Port Elizabeth, and a few years later transferred to the Assistant General Manager's Office at Johannesburg. Subsequently he was posted in turn to several staff investigation committees, including the Eight-Hour Day Committee and Rhodesia Union Confederation Commission. From 1923 he served for a period of fourteen years on the General Manager's Parliamentary staff, during which he was associated in a clerical capacity with the many developments which have characterised the policy of the South African Railways & Harbours Administration, such as electrification, construction of lines and harbour improvement schemes. In 1936 he was appointed First Assistant to the Director of Publicity & Travel at South Africa House, and on November 1, 1939, he succeeded to the position of Director. In the course of both duty and leisure Mr. Harrison has travelled extensively in South and East Africa, the British Isles, and on the Continent.

Mr. Herbert Lehman, Director-General of the United Nations Relief & Rehabilitation Administration, recently announced the retirement of Sir Arthur Salter, Senior Deputy Director-General of the Administration. On taking up his appointment, Sir Arthur Salter retained his seat in the House of Commons, but ceased to be Joint Parliamentary Secretary, Ministry of War Transport.

Mr. K. W. C. Grand, Assistant General Manager, Great Western Railway, has been appointed a Director of the Bristol Tramways & Carriage Co. Ltd.

Mr. J. R. Naisby, who, as recorded in our September 29 issue, has been appointed Director, Publicity & Travel Bureau, London, South African Railways & Harbours, entered the railway service in 1915 as a clerk in the Rolling Stock Section of the Assistant General Manager's Office, Johannesburg. He proceeded to France on active service with the First South African Infantry Brigade in 1917, and returned to civil duty in 1919, after having been wounded and held as a prisoner of war for eight months. Three years later he joined the Expenditure Section at headquarters, and in March, 1928, was transferred to the then newly-formed Tourist Department. Later in that year he went to the London Bureau, but returned to South Africa in 1935 to serve for one year more in the Publicity & Travel Department before taking up an appointment in the office of the Minister of Railways & Harbours which he retained until 1937. During that period he proceeded as Secretary to the Committee of Senior Officers which visited the Continent of Europe, Great Britain and America to investigate railway practice and procedure. Since 1937 Mr. Naisby has been on the General Manager's Parliamentary staff.

Mr. J. R. Naisby

Appointed Director, Publicity & Travel Bureau, London, South African Railways & Harbours

Commander Sir Charles Craven, Chairman & Managing Director of the English Steel Corporation Limited, has relinquished the latter office and Sir Alexander Dunbar has been appointed Managing Director. Sir Arthur Winder, who has expressed the desire to retire from business, has resigned his position as Director & General Manager of the English Steel Corporation Limited, Darlington Forge Limited, and Industrial Steels Limited; and Mr. F. Pickworth, a Director of those companies, becomes General Manager.

The late Sir H. L. Watkin Williams-Wynn, who was a Director of the Great Western Railway Company from 1885 until early last year, left (unsettled) £386,150.

Mr. C. A. Hadcock, A.M.Inst.C.E., A.M.Inst.T., Assistant to General Manager, Buenos Ayres Great Southern and Buenos Ayres Western Railways, who, as recorded in our September 15 issue, has been appointed also General Manager of the Buenos Ayres Midland Railway, is the nephew of the late Sir George Hadcock, F.R.S., who was a Director of Vickers-Armstrongs Limited. Mr. Hadcock was born in 1901 and was educated at Warwick School, and at Cambridge University, where he obtained 2nd class honours in the Mechanical Science Tripos. In 1922 he became Assistant Engineer on the reconstruction of the City & South London Railway, and two years later entered the service of the Buenos Ayres Western Railway; he held the position of Assistant Engineer until 1928, when he became Traffic Inspector. In 1929 he was appointed Assistant Manager of the Villalonga Express Company. A year later Mr. Hadcock became Assistant Engineer, Buenos Ayres Western Railway, and in 1934 he was transferred to the management as Technical Assistant. Two years later he was made Dock Superintendent, Buenos Ayres Southern Dock Co. Ltd. Mr. Hadcock was appointed Assistant to General Manager, B.A.G.S.R. and B.A.W.R., in 1943, and to his present position on August 15 last.

Mr. C. A. Hadcock

Appointed General Manager, Buenos Ayres Midland Railway

Lt.-Colonel A. N. Forman, Chairman, and Mr. J. T. McIntosh, formerly Secretary, of Hurst, Nelson & Co. Ltd., have been appointed Joint Managing Directors. Mr. James Waddell, formerly Chief Accountant, has been appointed Secretary.

Mr. Fleetwood C. Pritchard retired from the position of Public Relations Officer to the Ministry of War Transport on September 30 to rejoin the firm of Pritchard, Wood & Partners. Mr. Pritchard joined the old Ministry of Transport on August 5, 1940, and became Director of Public Relations when the Ministries of Shipping and Transport were merged. He will still retain some contact with the Ministry as he is continuing to serve as a Member of the Road Safety Committee, and will continue to act as adviser on publicity matters arising out of the Committee's work.

Mr. John Rosswick, Deputy-Director of Public Relations since 1941, has been appointed to act as Director in place of Mr. Fleetwood Pritchard.

The Great Western Railway announces the appointment of Mr. W. S. Baron as Manager of the G.W.R. Royal Hotel & Refreshment Rooms, Paddington.

Miss Barbara Dashwood, daughter of Mr. C. R. Dashwood, Chief Accountant, Great Western Railway, has become a fully-qualified chartered accountant at the age of twenty-three.

L.N.E.R. Appointments

Mr. J. Lorimer, Assistant Passenger Manager, Scottish Area, to be Acting District Goods & Passenger Manager, Dundee.

Mr. J. D. Horgan, Acting District Goods & Dock Manager, West Hartlepool, to be Acting District Goods & Dock Manager, Middlesbrough.

Mr. C. B. Glenesk, Acting Assistant District Engineer, Guide Bridge, to be Acting District Engineer, Guide Bridge.

Mr. J. E. Rutter, Assistant District Engineer, Hull, to be Acting District Engineer, Hull.

We regret to record the death on September 15, in his 72nd year, of Mr. T. R. Shaw, M.I.Mech.E., Chief Draughtsman, Churchill Machine Tool Co. Ltd.

We regret to record the death on September 25, at the age of 64, of Mr. Frederick Alfred Punter, who retired in 1924 from the position of Signal & Telegraph Engineer, Federated Malay States Railways. Mr. Punter followed the example of his grandfather, father and two elder brothers by entering the railway signalling profession; after training at the works of Saxby & Farmer Limited, he journeyed to the East, and later joined the F.M.S.R. He was a Member of the Institution of Railway Signal Engineers from 1915 until 1930.

Lord Royden, Chairman of the London Midland & Scottish Railway Company, making the seventeenth award of the Stamp Medal to Mr. J. J. Graham, fireman, for his part in preventing the passage of a troop train after the Gretna derailment on May 15

Brigadier I. L. H. Mackillop, Royal Engineers, has been made C.B.E. for gallant and distinguished services in Normandy.

Colonel Sidney H. Bingham, M.I.Mech.E., U.S.A. Army, who recently was placed in charge of supply and procurement for the invasion railway forces operating under Brigadier-General Clarence L. Burpee, was presented last March, by direction of the President of the U.S.A., with the Legion of Merit, for "exceptionally meritorious service" as Officer-in-Charge of Military Railway Engineer activities, and as Acting Assistant Chief of Transportation, Military Railway Division, Eastern Theatre of Operations, from July, 1942, to September, 1943. Colonel Bingham conceived, planned and supervised the establishment of a Transportation Corps depot for converting British railway equipment to meet military requirements, the assembly of American railway equipment received in dismantled form, and the storage of equipment for future operations. He designed and took charge of the conversion of British railway rolling stock to U.S.A. Army Medical Corps hospital-train requirements. He also designed, and supervised the construction of, a railway off-track emergency wrecking car, known as a "breakdown lorry," which has been adopted as standard equipment by both British and U.S.A. railway operating units.

His latest accomplishments are his plan for the conversion, within four hours, of Continental rolling stock of any type into emergency ward coaches, and other ideas which are at the present time on the secret list. Colonel Bingham entered railway service in 1915, as a surveyor with the Chief Engineer's Department of the Interborough Rapid Transit Company, New York City. After serving during the war of 1914-18, he returned to the I.R.T., and worked in the Car Department. Later he received promotions in the Electrical Engineer's, Maintenance of Way and Motive Power Departments. In 1935 he became Engineer & Transportation Officer to the President & General Manager of the company. When the I.R.T. was merged into the City Transit System, he became Superintendent of the entire undertaking. After his arrival in the Eastern Theatre of Operations with the first contingent of Transportation Corps officers, Colonel Bingham was assigned to planning railway operation in that area and in Africa. In October, 1942, he was appointed Officer-in-Charge of Military Railways, under Colonel Norman A. Ryan, Acting Chief of Transportation, and later served as Assistant Acting Chief of Transportation for Military Railways. Colonel Bingham is the first American Army officer to receive full membership of the British Institution of Mechanical Engineers.

Colonel Sidney Bingham, U.S.A. Army, adjusting the case containing a complete stretcher, which he has designed

TRANSPORT SERVICES AND THE WAR—262

The Flying Bomb

During the three weeks ended on September 25, it is estimated that the enemy launched some 120 flying bombs against this country.

Trains for Munition Workers "On Time"

A recent survey of the running of special trains for workers at Royal Ordnance Factories shows punctuality of 99 per cent. During a recent month, at six of the largest factories, which between them received 3,070 passenger trains, only 23 arrived more than 10 min. late. At two of these factories not a single train was late out of a total of 1,350. It is the practice of Factory Transport Officers to take up cases of late arrival with the railway companies concerned, and during the period in question an adequate explanation was given in every instance. Serious or prolonged trouble is followed up at Headquarters level, but it is now more than two years since any such action was necessary. The Ministry of Supply has sent a letter of thanks and congratulation to the railways on their excellent performance.

British Winter Train Services

On Monday last, October 2, British railway main-line winter train services were brought into operation, and with certain alterations restored in full the train service position as it existed in May last. The principal changes are as follow:—

L.M.S.R.

New expresses, which were to have been brought into operation on May 22, but were suspended, now run daily at 3.45 p.m. from Euston to Liverpool (due 8.5 p.m., and with a Manchester connection due 8.26 p.m.), and at 11.40 a.m. from Manchester London Road and 12.57 p.m. from Stoke-on-Trent to Euston (due 4.18 p.m.). On Tuesdays, Wednesdays, and Thursdays the 11.55 a.m. from Euston to Morecambe and Barrow carries a through Manchester portion, but on Mondays, Fridays, and Saturdays this runs independently at 12 noon. The 3 p.m. Belfast Boat Express, *via* Heysham, and the corresponding up express at 8.18 a.m. from Heysham, are restored, but run on Tuesdays, Thursdays, and Saturdays only. The 4.50 p.m. from Glasgow Central to Crewe *via* Kilmarnock is not restored, but the 5.30 p.m. from St. Enoch continues to run through to Crewe, and to carry a through portion for Plymouth. The 9.10 p.m. express from Glasgow Central to Euston (relief to the 9.30 p.m. sleeper) starts at 9.5 p.m. The 10 a.m. from Glasgow St. Enoch to St. Pancras is detained at Carlisle from 12.35 to 1.4 p.m. for the L.N.E.R. connection (which leaves Edinburgh at 10.5 instead of 9.55 a.m.), starts from Carlisle 9 min. later, at 1.4 p.m., and is due in St. Pancras at 9.40 instead of 9.30 p.m. Of the train restorations the most important are the 1 p.m. from Euston to Glasgow and the 1 p.m. from Glasgow to Euston, which have remained suspended until the end of September; others include the 4.50 p.m. relief Stranraer boat train from Euston (for Dumfries and Stranraer only), the independent running at 5.38 p.m., except on Saturdays, of the Manchester portion of the 5.30 p.m. from Euston to Liverpool, and daily of the 10 a.m. from Euston to Glasgow of the 10.5 a.m. to Perth; the 9.35 a.m. from Glasgow to Birmingham; and the independent working from Crewe of the 8.40 a.m. from Perth, due Euston at 7.8 p.m.; also, on the Midland Division, the 9.5 a.m. from St. Pancras to Sheffield, the 1.30 p.m. to Manchester, and the 7.15 a.m. from Bradford and 8.55 a.m. from Manchester to St. Pancras are restored. The 9.30 a.m. from Bradford to Bristol and the 12.55 p.m. (now 12.50 p.m.) from Bristol to Bradford are restored, but connection to and from Bath and Bournemouth is made in each direction at Mangotsfield, instead of by independent trains from Gloucester and to Birmingham respectively.

L.N.E.R.

The new L.N.E.R. timetables incorporate some considerable alterations from the main-line service which was in operation until May 21. Some of these changes were to have come into effect on May 22, but numbers of the trains concerned were withdrawn; practically all are now restored, with certain week-end additions. Last winter's 9.30 a.m. express from Kings Cross to Leeds and Bradford, put forward to 9 a.m. in the May 22 timetable, is now to start still earlier, at 8.55 a.m., reaching Leeds Central at 1.17 p.m. and Bradford Exchange at 1.40 p.m. A new relief express is run on Mondays, Fridays, and Saturdays at 9.15 a.m. from Kings Cross to Newcastle, arriving at 3.10 p.m. Last winter's 9.50 a.m. down Edinburgh relief, which from May 22 has started at 9.40 a.m., is to continue calling at York, whereas last winter it was non-stop from Grantham to Darlington. The 12.45 p.m. from Kings Cross to Edinburgh, and the corresponding up express at 1.10 p.m. from Edinburgh, are permanently restored, and a new express is run on Fridays and Saturdays at 12.55 p.m. (as a relief to the 1.10 p.m. down) for Leeds and Bradford. The 3.50 p.m. down Newcastle and the 4 p.m. to Leeds are reinstated, but not the 3.30 p.m. Newcastle relief on Fridays only. In the up direction various alterations from the previous winter's service, which were tabled in the May 22 alterations, are perpetuated, such as the stop at Peterborough (instead of Grantham) of the 8.50 a.m. from Darlington to Kings Cross. The up "Flying Scotsman" continues to run non-stop from Darlington to Grantham, missing York, and on Mondays, Fridays, and Saturdays is relieved by a new 12.25 p.m. express from Newcastle, due at Kings Cross 15 min. ahead, at 6.30 p.m. On the Great Eastern Section all the withdrawn trains are restored, but there is a general slowing down of Colchester main-line trains by from 5 to 10 min. on their through journeys. On the Great Central Section and North Eastern Area the through service between Newcastle, York, Sheffield, Leicester, Banbury, Reading, and Ashford (Kent) is diverted from Oxford to Southampton, running in both directions over the L.N.E.R. at much the same times as previously; it leaves Newcastle at 9.15 a.m. and reaches Southampton at 6.50 p.m., and on the return journey, leaving Southampton at 10.10 a.m., it reaches Newcastle at 8.55 p.m. Though available to the general public, this trains is not as yet advertised.

G.W.R. AND *S.R.*

On the Great Western Railway there is the same complete restoration of service as on the other main-line railways, including trains which were withdrawn well before the general withdrawal at the end of May, such as the 12.30 p.m. express from Paddington to Weymouth and the 4 p.m. from Weymouth to Paddington. As compared with last winter's services, the 9.50 p.m. from Paddington to Penzance reaches Bristol at 1.50 a.m., 20 min. later; Plymouth at 5.55 a.m., 35 min. later; and Penzance at 9 a.m., 22 min. later; the down Cornish Riviera Limited arrives Penzance at 6.25 p.m. 5 min. later; and the 12 noon from Bristol reaches Paddington at 2.50 p.m., 5 min. later. The 2.10 p.m. from Penzance to Plymouth starts at 1.55 p.m. A relief train for Reading and stations to Didcot, at 4.40 p.m., precedes the 4.45 p.m. down Oxford and Worcester express. Certain of these changes were introduced in the May 22 timetable.

The Southern Railway announces the continuance of the services advertised to come into force on May 22, with the exception of the trains which were specified as operating during the summer season only. As mentioned among the L.N.E.R. alterations, the previous through Ashford-Newcastle service now runs between Southampton and Newcastle.

The Wick & Lybster Light Railway

The Caithness County Council is asking the Ministry of War Transport why Wick & Lybster light railway is being dismantled without any explanation being given to the local authority. When the line was closed last April as an emergency war measure, the Minister of War Transport informed the County Council that the local authority could raise the question of reopening the line at the end of the war. At a recent meeting of the County Council, two members said they understood that the line would be reopened in due course, and perhaps extended to Helmsdale. The closure was recorded in our issues of March 24 (page 323) and March 31 (page 326).

Road Transport and the Western Invasion

The extensive employment of civilian road transport as part of the supply lines for the Allied invasion of France does not lend itself so readily to statistical analysis as the use of special trains on the railways. Nevertheless, some indication of the value of these road transport services, principally in connection with the Government Road Haulage Organisation, has been given in a recent official statement of the Ministry of War Transport.

Most of the drivers were at home when the call came to assist in moving the guns and other equipment of the U.S. Third Army. They were called out late on a Saturday evening and dispatched immediately on journeys which, in some instances, involved 48 hours of continuous duty. Two drivers were allotted to every vehicle so that they might take turns at the wheel. On their arrival at the reporting centre, they were relieved by fresh crews who completed the journey to the port of embarkation. As many as 14 guns were dispatched from one area alone. Drivers were told to choose their own routes and to use their experience and commonsense in negotiating hills. In every instance they completed the journey without mishap.

Civilian lorry drivers are also helping Service transport to effect movements of bombs required for R.A.F. operations. At 7.30 on a recent Saturday evening, for instance, they received urgent orders to move 1,100 tons of bombs from certain R.A.F. airfields to other airfields some

distance away. One of the airfields concerned was 150 miles from the starting point; another was 170 miles away. The bombs were required for current operations in France, and the lorry drivers saw to it that they reached the airfields in time. In return, the R.A.F. made the lorry drivers their guests for the night.

Secret and urgent movements of this kind are stated to be handled frequently by the Government Road Haulage Organisation. In the first twelve weeks after "D" Day, the drivers manning vehicles working under the Road Haulage Organisation, moved more than 10,000,000 tons of traffic, much of it for the Allied Forces in France. They have carried everything from bombs to 40-ton barges and from biscuits to bulldozers.

Liverpool-Dublin Air Lines

The air services between Liverpool and Dublin, which were resumed on September 8 after a suspension of five months (as we recorded in our September 15 issue, page 266), are those of the Aer Lingus Teoranta. We are officially advised that the air services between Liverpool and Dublin operated by West Coast Air Services Limited (the British railway associate) were not suspended, but have been worked continuously during the year.

Time in Ireland

As a result of the discontinuance of extended summer time in Northern Ireland, numerous alterations were made in the train services of the Great Northern Railway (Ireland) on Sunday, September 17. The services affected are Belfast-Dublin, Belfast-Omagh-Londonderry, and Belfast-Clones-Cavan. These are the principal services originating in Northern Ireland and extending into Eire.

The new timetable of the G.N.R. once more contains a good map of the system.

Improving Railway Lighting

The recent lighting relaxations have now been supplemented by further special improvements aimed at increasing the comfort and convenience of railway passengers. These will be brought into operation as soon as the alterations can be made.

Material improvement has been authorised for passenger stations wherever the new relaxations apply. The Ministry of Home Security has announced that, at London termini and large provincial stations, the new standard will be five times brighter than the brightest lighting hitherto allowed. At smaller stations the increase over previous standards will be substantial.

Paddington Station, G.W.R., was the first of the London main-line stations to revert to pre-war lighting standard. Before nightfall on October 2, the 600 electric light bulbs in the station had been changed, and passengers had the benefit not only of the new lamps but of the old emergency A.R.P. lamps, which had been improved with bulbs of greater wattage.

Inside trains, peacetime lighting will be restored so long as there are opaque blinds to the windows and these are kept down. This is not possible where there are no blinds, but the wartime shades over the lights will be modified so as to give better light throughout the compartment.

Cut in U.S.A. Rail Allotments

The tonnage of new replacement rail available in the U.S.A. for domestic railways during the third and fourth quarters of 1944 will be cut substantially, because of reduced production and increased demands of other agencies of the Government. During the third quarter, approximately 400,000 tons of rails were allotted to the railways, compared with the 500,000 tons previously allotted and an original office of Defense Transportation request for 550,000.

A final decision on the fourth allotment has not yet been made, but the total quantity will probably be somewhat less than that for the third quarter. The total new rail for the U.S.A. railways during the year 1944 is now indicated at about 1,800,000 tons, which, although much below the O.D.T. stated requirement, is still greater than the 1,540,000 tons made available in 1943.

Berlin Salvage for Producer Gas

Timber salvaged from bombed houses in Berlin is being used as producer-gas fuel for buses and motorcars, according to the German News Agency.

Coal on Russian Railways

The railways of the U.S.S.R. consume more than 30 per cent. of all the coal produced in the country, according to an official statement of the Chief of the Fuel & Heating Department.

Producer-Gas in Norway

According to an announcement issued by the Norwegian General Transport Management early in July, some 20,000 motor lorries, taxis, and delivery vans in Norway have been converted to producer-gas working. The target figure has thereby been attained, it is officially explained, but development is to be continued. The greatest progress has been achieved in southern Norway where there are more facilities for the supply of producer-gas wood fuel than in other parts of the country.

Production at Le Creusot

The most important steel works of central France, namely, the Schneider plant at Le Creusot, is stated to have made every effort during the German occupation of France to avoid assisting the German war effort. After the German armistice with France, the Germans established at Le Creusot an important mission which included three high officials from the Borsig Works. It is stated that M. Jacques Schneider (who, with his brother, owns Le Creusot) was faced with the alternatives of stopping work, which would have meant the transfer of the plant and workers to Germany, or of continuing production at the lowest figure which the Germans would tolerate. He had refused to manufacture armaments after the fall of France, but was compelled to produce castings. For a long time M. Schneider kept only one of eight Siemens furnaces working, but, after lengthy argument, was ordered by the Vichy Government to place a second into commission. He then "arranged" to run out of raw materials so that the original 60-ton furnace ceased production as soon as the second furnace (a 30-ton one) went into operation. The upshot was that the production of steel fell from 20,000 tons in 1940 to 2,500 tons a month in 1943. Similarly, locomotive production, which in 1940 was 35 engines a month, fell to 5 a month (2 of which were for France), and latterly to 2 only.

U.S.A. Goods Wagons for India

Additional orders for 4,800 cars, placed by the U.S.A. War Department and understood to be for export to India, brings the U.S.A. Army's goods-vehicle contracts with American industry up to a total of 28,460 cars for overseas delivery next year. The latest orders cover 300 tank cars, 2,500 box cars, and 2,000 gondolas.

Burma Road Commission

In expectation of the forthcoming reopening of a land route between China and the outside world as a result of Allied victories in North Burma and Yunnan, a commission for the supervision of transport of imported supplies has been inaugurated in Kweiyang, capital of Kweichow Province, through which runs the main route from Kunming (terminus of the Burma Road) and Chungking. The commission, which has six Chinese and three American members, will have the task of controlling and directing all existing transport facilities to secure the maximum efficiency in haulage of vital supplies along China's highways. Already the commission has charge of a fleet of lorries operating from Kunming along the trunk highway system of south-west China, but its main function will be to supervise the operation of the India-Burma-China route when that is opened.

Wood Fuel for Brazilian Locomotives

In war conditions wood is being used to a surprisingly large extent for firing locomotives in certain regions of Latin America. This view shows a point on one of the principal railways in Brazil, where heaps of wood are stacked for locomotive firing, as coal is difficult to obtain in present circumstances

The Indian Railway Contribution to Victory

Radio survey by the Chief Commissioner of Railways, and tribute to staff tenacity of purpose

Some indication of the difficulties encountered by the Indian railways during the war, and the way in which these have been overcome by determination and tenacity of purpose, was given by Sir Leonard Wilson, Chief Commissioner of Railways, Government of India, in a broadcast talk from the Delhi Station of All India Radio on September 9. This was the first of a series of radio talks arranged by the War Transport Department of the Government of India. Sir Leonard Wilson said : In a previous broadcast, I referred to the intimate part played by railways in the life of the Indian community. It is regrettable that, during the five years of this war, railways in India have been unable to fulfil all their obligations to the civil population because of the heavy burden thrust upon them by war. Those interested in railways would like to know more about their performance in countries at war, but they must wait until after the war to hear the tale in full.

Meanwhile, we learn of attempts to destroy the enemy's rail communications which are vital for the transport of munitions and supplies, for it is still a fact that the railways are the only means of land transport capable of delivering, with the minimum of human effort, the enormous tonnages involved in modern warfare. There is, moreover, no form of land transport so durable as railways, so difficult to put out of action, or so quickly restored. It is but natural, therefore, that an army relies on rail transport, wherever rail transport can be provided, in preference to road or air. Final delivery to the front line may be made by road or by air, as we have recently seen in the magnificent defence of India's eastern frontier, but there is not a single item of equipment, stores, food, medical supplies, ammunition, or any of the other many thousands of items making up the means by which an army fights, which does not, at some stage of its journey, travel by rail—and probably a long way by rail.

It seems that the civil population of this vast country, determined that the war should be won, has borne with much patience the inability of the railways fully to meet their needs because the necessity has been appreciated of giving preference to military traffic flowing to and on the lines of communication within India and overseas.

The news from all the fighting fronts is most encouraging. Behind the victories of the Allies, made possible by the gallantry, courage, and determination of the Armed Forces on land, sea, and in the air, lie months of planning, training, and production. We of the railways in India have also planned, have trained, and have produced, but in the wide strategy of a world war, in which no single Allied country is entirely self-sufficient, the needs of each country must be assessed in relation to the part which that country is called upon to play from time to time in securing the ultimate victory. Thus, we in India have had to wait for much badly-needed equipment, while countries more closely pressed by war have been supplied. Our turn, however, is now coming, and we are receiving in ever-increasing quantities additional locomotives and wagons that will enable us more effectively and punctually to meet military requirements and, at the same time, to restore to the necessary extent the transport for the much-reduced civil traffic.

Development Work

Adding to the number of locomotives and wagons will not alone, of course, meet the situation. We must be in a position to use them fully and efficiently, and, to enable this to be done, development works have to be undertaken on the main-line routes throughout India. Some are in progress and some have been completed and they will enable a greater number of trains to be run at a higher overall speed. Lines are being doubled and quadrupled, yards improved, new watering stations opened, and better coaling arrangements for engines brought into force. All these new works are being rapidly pressed on with, so that when the time comes we may be ready to perform the task that the country requires of railways, with the least possible curtailment of civil traffic.

Telecommunications

No railway can be worked efficiently without an adequate system of telecommunications, which include telephones, telegraph lines, and train-control systems. This important side of railway operation is receiving the most careful attention, and there is now in progress a very substantial extension to the pre-war telecommunication system throughout the main lines in India. We shall not, in the near future, be entirely dependent upon land lines, which are so liable to interruption by the forces of nature, for there is in process of construction a network of radio communication between important centres on railways. Indeed, in some areas radio communication has already been installed and is giving valuable service.

Additional Staff

The increasing demands placed on railways have necessitated the recall from military service of many officers, and men who, in the earlier stages of the war, offered themselves for military service. The Army has been loath to lose them and the staff themselves are naturally reluctant to return to civil life before the war is over, but with the increasing pressure on the railways there is no alternative. The railway staff which has worked so well and loyally is being increased steadily in numbers to enable full use to be made of the additional locomotives and wagons that are now coming into service. Training is progressing satisfactorily, and I feel certain that these new recruits will not fail to follow the magnificent example set by the railway staff as a whole throughout these five long and arduous years of war. The strain which railwaymen in every branch of the service have been undergoing is not perhaps fully realised, but it is great and continuous.

Workshop Efficiency

In the locomotive shops, no effort is being spared to expedite repairs so that engines, so vitally required, are out of service for the shortest possible time, and the additional work of erecting new engines is also being undertaken. In all workshops, extremely diverse war work is being carried out, in addition to the normal work of these shops. This ranges from the fabrication of pontoons to the manufacture of delicate precision instruments, and full use is being made of all available machinery. One railway workshop manufactured completely a battery of milling machines urgently required for the production of essential war supplies. Two workshops, undertaking repairs to aero engines, have been complimented upon the accuracy and general excellence of their work. To meet the heavy demand for essential war supplies, in some cases we have placed our own work out to contract to free capacity in our well-equipped shops for work that could not be done anywhere else. There are, in fact, hundreds of examples of railway mechanical engineers, and their highly trained and expert staff, meeting urgent demands of an unusual nature, and yet the work of repairs to locomotives and stock has continued without delay.

Construction of Military Depots

On the civil engineering side, I have already referred to the construction that is in progress throughout our main lines of communication, but there are many works which have been undertaken about which the public can know but little at present. We have constructed rail-served military depots requiring, in one instance, as much as 75 miles of track. These depots require their own marshalling yards, sorting lines and service lines to storage sheds widely dispersed against the possible attack from the air. In one instance, a depot was constructed in waterlogged country within three months, and at the same time as this work was in progress, practically throughout the main line other works were being undertaken to increase line capacity ; and yet the maintenance of the running lines continued at the high standard necessary for the public safety. There are many other examples of this kind on all the main-line systems. Also on the engineering side are the signal and interlocking staff on whose careful maintenance of complicated interlocking systems the safe passage of trains so largely depends. Not only has this day-to-day maintenance been carried out with a high degree of efficiency, but much new signalling has also been, and is being, installed. Our engineering officers and staff have gladly undertaken all the extra work that has fallen to their lot, and have every right to feel that they are making a major contribution to the war effort.

Arduous Time for Running Staff

It is, however, the traffic and the running staffs who are most in the public eye, for it is they who come into immediate contact with the public and it is from this contact that the efficiency of a railway is frequently judged. They have had a particularly arduous time, for all day and night the wheels must be kept turning and it is the traffic and the running staffs upon whom this responsibility falls. The work of passing trains safely from station to station, especially on a single line, is an anxious work, for nowhere in the world can the human element be eliminated from this work. It is upon the vigilance of this staff, stationmasters, cabinmen, guards, firemen, and drivers that the safety of the travelling public depends, and it is their unremitting toil that has enabled the Indian railways to shoulder successfully the vast burden thrust upon them.

Many difficulties have been encountered by railways during the war, but each of these difficulties has been overcome by the determination and tenacity of purpose of all railwaymen, no matter what their position, caste, or creed, inspiring such faith in the ability and loyalty of every member of the staff that we may look forward with confidence to the future of the great system which links up the length and breadth of the continent of India.

Staff and Labour Matters

Re-Allocation of Manpower

The Government has issued a White Paper (Cmd. 6548) on its demobilisation plans under the title of "Re-Allocation of Manpower between the Armed Forces and Civilian Employment during any interim period between the Defeat of Germany and the Defeat of Japan." It states that general demobilisation, either of the armed forces or of war industry, cannot take place until the end of the war against the Axis Powers and their total defeat throughout the world. The plan set out is framed on the basis that the war against the Axis Powers is one war, and that hostilities will end first in Europe. It is governed by the paramount consideration that there can be no break in the war effort after hostilities cease in Europe, and that, in association with the other Allied Powers at war with Japan, there must be the maximum deployment of the forces needed to bring complete victory as early as possible. It follows that in the interim period, the problem will not be one of demobilisation, but of re-allocation of manpower between the Forces and industry to provide best for the requirements of the changed situation.

As an essential part of this re-allocation of manpower, it will be necessary to continue the compulsory recruitment of men for the Forces, to bring relief to the men who have served for long periods, and enable more of them to return to their homes. It will also be necessary to maintain the requisite control over industry and labour during the interim period, in which there will continue to be heavy and over-riding demands for munitions of war and other essential production.

Until the requirements for the continuation of the war against Japan, and for the garrisoning of occupied countries, are known finally, it is impossible to determine precisely the level at which the Armed Forces will have to be maintained in the interim period. It is clear, however, that, taking the Armed Forces as a whole, re-allocation between them and industry will be possible on a substantial scale, although the rate of re-allocation must differ as between the three services. Re-allocation must be governed by two main principles:—

(*a*) military requirements must override all other considerations;

(*b*) the arrangements for the release of men from the Forces must be such as will be readily understood and accepted as fair by the Forces, and must not be too complicated for practical application.

The Government adhere to the view that a fair and reasonable scheme can be secured best on the basis of releasing according to age and length of service, but it recognises that it will be necessary also to make a limited provision for certain urgent work of reconstruction on which a beginning must be made in the interim period. The plan accordingly provides for two separate methods of selecting men for return from the Forces. Those selected according to age and length of service will form one class (Class A), and those selected on account of their qualifications for urgent reconstruction work will form a second class (Class B).

Release of men in Class A will begin as soon as practicable after the defeat of Germany. The combination of age and length of war service will be on the basis that two months of service is equivalent to one additional year of age; for example, a man of 22 years of age with four years' service would be in the same release group as a man of 40 years of age with one year's service.

The men in Class B who will be transferred specially from the Forces, will be those identified as belonging to particular occupational classes, specified by the Minister of Labour & National Service as required for certain urgent reconstruction employments. They will be required mainly to supplement the labour force available for building houses. In addition, Class B will include a limited number of individual specialists, whose transfer application may be made through Government Departments in accordance with existing arrangements.

It will be possible for men to obtain release on compassionate grounds in accordance with the arrangements already in force.

Transport in Ulster

Mr. G. B. Howden, General Manager, Great Northern Railway (Ireland), stated in Belfast on September 25, that in his view public transport in Ulster, whether by rail or by road, if it was to exist in the immediate future would have to be fully and properly co-ordinated. Neither the railways nor the Northern Ireland Transport Board, the principal public road transport undertaking in the Province, had any prospect of being able to function properly without subsidy, and neither wanted that, so long as both were worked independently and competitively. Each without the other, no doubt could pay its way, but at that stage in their development the elimination of either was unthinkable. Both might function independently if private transport were largely eliminated, but that was equally unthinkable.

"There is but one solution to the whole difficult problem—the railways and the transport board must be thoroughly co-ordinated without delay," he said. "How such co-ordination is to be effected is less important than to realise that in the interests of all it is indispensable and that such action as necessary is taken without further delay."

Mr. Howden said that in 1938 the Northern Ireland railways, disregarding the traffic on parts of those which operated in Eire, carried about 15,000,000 passengers, more than 1,000,000 tons of freight and 650,000 head of livestock. The total gross receipts were about £1,275,000; last year they were almost double that amount. After meeting all expenses of working and maintaining the undertakings and providing for renewals of track, rolling stock, etc., there was a total balance in 1938 of only about £18,500 equivalent to 0·17 per cent. on the capital of £11,000,000. Such a state of affairs had lasted for several years and could not have continued for much longer.

Pointing out that passengers in luxury express trains in England in pre-war days paid a supplemental charge over and above the full fare and that the same applied in America, he said that if the public in Northern Ireland was prepared to pay extra charges, luxury could and would be available to it. In pre-war days the cost of railway travel in Northern Ireland was already lower than in Great Britain.

Northern Ireland was a small country with a total population little greater than that of one of the larger British cities, and for the volume of traffic available there existed three principal railways, the Road Transport Board, and in normal times a host of private cars and lorries. As a result, without control in some form there must be intense competition for the limited volume of passengers and freight.

The emergency temporarily had changed the position and the Transport Board and the railways had been able to secure not unreasonable returns on their capital. These conditions were artificial and with the end of the war the former state of affairs was bound to return unless something drastic was done in the meantime. All parties were at one on at least the broad issue—the urgency the indispensability of co-ordination.

The County Down Railway went into the question of electrification some years ago, and was advised by an eminent firm of experts that there was no justification for electrifying it in those days, when the traffic was very much greater. That did not mean that the question of electrification would be disregarded when improvements were considered. Most of their stations were built a long time ago and were very substantial structures. The companies had begun improvements, but were bound by finance.

Presentation to Mr. F. H. Layton

At a meeting of the Railway Executive Committee Passenger Committee on September 26, Mr. F. H. Layton (Rates & Fares Assistant to the Passenger Manager, Southern Area, L.N.E.R.), who has been engaged on special duties as Assistant to the Chairman of the committee since its inception in 1938, was the recipient of a testimonial to mark his retirement after nearly 50 years' railway service.

Mr. A. E. Hammett (Commercial Superintendent, Southern Railway), Chairman of the R.E.C. Passenger Committee, in making the presentation, paid tribute to Mr. Layton's outstanding ability and to the assistance he had rendered for many years in the administration of the passenger departments of the railways, and during wartime, to the Passenger Committee. He had been for many years Chairman of many important Railway Clearing House committees of passenger superintendents' chief assistants. Mr. Hammett expressed sincere wishes for a long and happy retirement.

The members of the R.E.C. Passenger Committee—Mr. C. G. G. Dandridge, Passenger Manager, Southern Area, L.N.E.R., Mr. G. E. Orton, Commercial Assistant to the Superintendent of the Line, G.W.R., Mr. C. Johnstone, Assistant Chief Commercial Manager (Passenger), L.M.S.R., and Mr. B. H. Harbour, Commercial Manager, L.P.T.B.—and Mr. A. B. B. Valentine, Chief Supplies Officer, L.P.T.B. (a past member of the committee) also paid tribute to Mr. Layton's valued assistance, and to his outstanding personality.

Mr. G. Marshall, Chairman, R.E.C. Goods Committee, on behalf of himself and members of that committee expressed best wishes to Mr. Layton, with whom they had been associated for a long time.

Mr. Layton expressed his thanks to the Chairman and members of the Passenger Committee, and said that it had been a great privilege to have been associated so closely with the higher management of the passenger departments of the railways, and, during the stress of wartime, when conditions were altogether abnormal, with the R.E.C. Passenger Committee.

Questions in Parliament

Winter Services on Railways

Mr. Rostron Duckworth (Manchester, Moss Side—C.) on September 27 asked the Parliamentary Secretary to the Ministry of War Transport whether the railway companies would be able to improve their passenger train services this winter, in view of the course of hostilities on the Continent.

Mr. P. J. Noel-Baker (Parliamentary Secretary, Ministry of War Transport): As from October 2, the railways will run the same services that they provided last winter. The companies will still have to contend with difficulties over manpower, locomotives and rolling stock, and they must give priority to the large volume of essential traffic that is passing. Mr. Duckworth will understand, therefore, that it will not be possible to restore normal peacetime passenger services in the early future.

Transport Lighting Restrictions

Sir Ralph Glyn (Abingdon—C.) on September 26 asked the Secretary of State for the Home Department whether he was in a position to make a further statement as to the modification of existing blackout regulations and restrictions, especially as they affected transport by rail and road.

Miss Ellen Wilkinson (Parliamentary Secretary, Ministry of Home Security) in a written reply stated: Since Sir Ralph Glyn put down this question, full public statements have been made, and appeared in the Press on September 7. In addition, improvements have been authorised for railway passenger stations and the interior lighting of trains.

Restaurant Car Restoration

Mr. Duckworth: Can the Parliamentary Secretary say anything as to the restoration of the restaurant car service?

Mr. Noel-Baker: I am afraid that I could not make a statement yet.

Colonel T. G. Greenwell (Hartlepools—C.): May I ask the Parliamentary Secretary if it will be possible to improve the running time of the long distance trains, and if he cannot restore restaurant cars, will be, at least, consider putting on buffet cars, as the need is very greatly felt by the travelling public?

Mr. Noel-Baker: Yes, Sir. I recognise that, but we have tried to improve restaurant facilities at stations, and we will certainly restore the restaurant cars or buffet cars as soon as we can, but it is now a choice between seats for passengers, or buffet cars.

British Locomotives Building

Mr. T. H. Hewlett (Manchester, Exchange—C.) on September 26 asked the President of the Board of Trade whether any plans were being evolved for the large scale production of British locomotives after the war, since replacements and additions were urgently needed in many parts of the British Empire.

Dr. H. Dalton (President of the Board of Trade): Yes, Sir. When the present high output of locomotives for military use is no longer necessary, the industry will be able to devote itself to meeting the large demands of Empire and other overseas countries. (*See editorial note, page* 321).

Road Transport in Stroud Valleys

Mr. W. R. D. Perkins (Stroud—C.) on September 27 asked the Parliamentary Secretary, Ministry of War Transport, what steps he had taken to relieve the bus situation in the Stroud Valleys on account of the increase in population.

Mr. P. J. Noel-Baker in a written answer stated: The Regional Transport Commissioner has authorised a strengthening of the services on seven local routes. This is an experimental measure, and will be subject to review, if circumstances should require a further change. The increased services will come into operation very shortly. I am sending the details to Mr. Perkins.

Road Traffic Speed Limit

Mr. W. Leach (Bradford Central—Lab.) on September 26 asked the Parliamentary Secretary, Ministry of War Transport, if his attention had been called to the diminution in road fatalities in the U.S.A. since the legal introduction of the 35 m.p.h. speed limit in September, 1942; the death roll for 1943 was 23,300 against 40,000 in 1941; and would he now consider the introduction of a similar limit in this country.

Mr. P. J. Noel-Baker in a written answer stated: Certain information received from the U.S.A. concerning the operation of the speed limit will be considered by the Committee on Road Safety, so to assess, as far as possible, its effect on road accidents. I think it would be unwise to anticipate the conclusions which the Committee may reach.

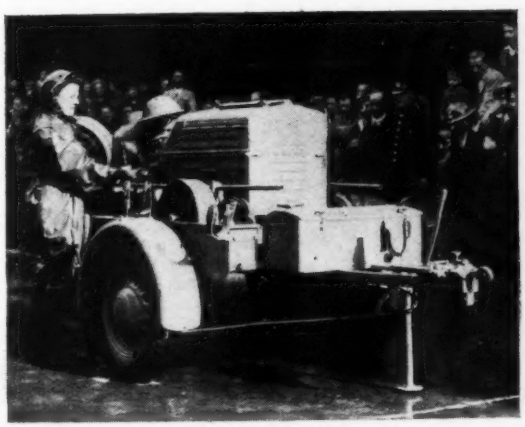
The 115th L.N.E.R. Canteen

One million meals a month are now being served in L.N.E.R. staff canteens as a result of the opening, on September 19, at Ducie Street Goods Depot, Manchester, of the 115th canteen.

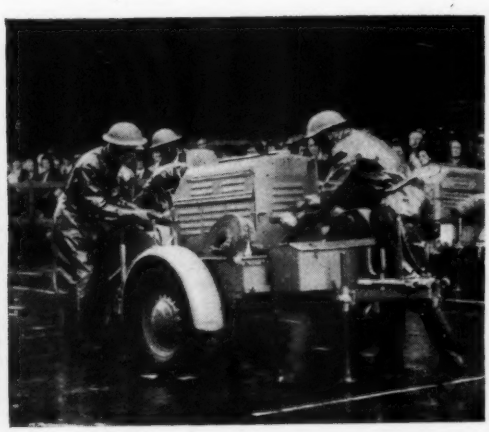
The new installation will cater for the needs of the L.N.E.R. staff of 400 at Ducie Street Goods Depot and Manchester (London Road) Station. At the opening ceremony, reference to the staff's appreciation of the canteen was made by Mr. J. Railton, Secretary, Manchester No. 3 Branch, N.U.R., who said that when one compared the new canteens with the old-time messrooms one could only say that railway staffs were very pleased with the company's endeavour to bring about such comforts for them. On behalf of the staff, which he knew he had with him, he offered thanks. The ceremony was performed by Mr. H. S. Owen, District Goods Manager, Manchester, L.N.E.R.; and others present included:—

L.N.E.R.: Messrs. F. W. Wheddon, District Passenger Manager, Manchester; E. K. Portman-Dixon, Canteen Superintendent; J. E. North, Hotels District Manager, Manchester; J. Hodgson, District Estate Agent, Manchester; A. S. Mead, Assistant District Passenger Manager, Manchester; H. J. Price (representing Mr. George Dow, Press Relations Officer); W. Bann, Assistant District Goods Manager, Manchester; W. Macdonald, Goods Agent, Ducie Street; H. Kinsey, Goods Agent, Ardwick; W. Walden, Goods Agent, Deansgate; J. T. Wiggans, Stationmaster, Manchester (London Road); R. Ockenden, Canteen Supervisor; and A. Crabtree, canteen committee staff representative; R.C.A.: Mr. J. Burton, Secretary, Manchester No. 6 Branch; N.U.R.: Messrs. J. T. Smith, Secretary, Manchester No. 16 Branch; J. Singleton, Secretary, Ardwick No. 1 Branch; and W. Hughes, Secretary, Manchester No. 2 Branch; John Gardner Limited: Mr. C. H. Baxter, Area Manager.

G.W.R. All-Line Trailer Pump Competition



Hockley Goods Ladies' Team



Kidderminster Men's Team

Two of the teams engaged in the third G.W.R. All-Line Trailer Pump Competition, which was held at Bristol on September 17. A report of the proceedings and the results of the competition were given in our September 29 issue

Notes and News

Paraguay Central Railway Co. Ltd.—Twelve months' interest on the 7 per cent. "A" debenture stock was paid on September 30.

Western Railway Co. of Mexico Ltd.—At an extraordinary general meeting of this company, held at 11, Ironmonger Lane, E.C.2, on September 14, it was resolved that the company be wound up voluntarily and that Mr. Roderick Mackay Peat be appointed liquidator for the purpose of such winding-up.

Chemin de fer Aigle-Leysin.—This Swiss private company showed a loss of fr. 154,005 for 1943, although working receipts were higher at fr. 414,798, compared with fr. 346,501 for 1942. Working expenditure increased from fr. 286,458 in 1942 to fr. 328,738; and the working surplus was fr. 86,060, compared with fr. 60,043 in 1942.

Bengal-Nagpur Railway Co. Ltd.—At an extraordinary general meeting held in London on October 2 a resolution was unanimously approved for the voluntary liquidation of this company. It is intended immediately after the commencement of the winding-up that the liquidators shall make an initial distribution to the stockholders of £119 for each £100 of capital stock held.

Trespassing Children.—At a recent special sitting of the Greenock Juvenile Court, 75 boys and girls of ages ranging from 8 to 16 years were charged with trespassing on the L.M.S.R. between Lynedoch Station and Kilmacolm. For the railway company it was stated that these proceedings were being taken because of the great amount of damage being done to railway property in the district, but it was not alleged that any of the children before the Court were responsible for damage. The justices fined each of the parents of the children concerned £1.

Egyptian Delta Light Railways Limited.—Gross receipts in the year ended March 31, 1942, were £352,005 (£248,457) and working expenses £262,608 (£214,024), giving an operating ratio of 74·60 per cent. against 86·26 per cent. The balance carried to net revenue acconnt is £89,397 (£34,133), which, with interest, and dividends, etc., received from subsidiary companies, gives a total of £93,439. After providing for interest on debentures and for all fixed charges, there is a balance of £7,898, to which must be added £31,182 brought forward, making a total of £46,080 which is being carried forward. Coaching receipts rose from £140,642 to £197,792, and goods traffic receipts from £104,037 to £147,272, aided by increased tariffs. Otherwise, goods receipts would have been lower. Working expenses included £30,000 provision for deferred renewals and replacements.

Diesel Works Deal.—The shareholders of Mirrlees, Bickerton & Day Limited have approved the sale of the diesel engine business of that company to Associated British Engineering Limited, and the conditional agreement between the companies now becomes operative. As soon as the technical details are settled, Associated British Engineering Limited will form a new company, to be called Mirrlees, Bickerton & Day Limited, and the existing company will change its name to the Mirrlees Watson Co. Ltd. The latter company will carry on its present business of making sugar machinery and other special lines. Further details as to the agreement were given on page 270 of *The Railway Gazette* for September 15.

A. Reyrolle & Co. Ltd.—The directors are paying on October 3 an interim dividend of 5 per cent., less tax, on the £828,317 ordinary stock. Last year's interim payment of 5 per cent. was on £816,711 capital.

Vickers Limited.—The directors give notice that an interim dividend of 4 per cent. (actual), less income tax on the ordinary stock of the company in respect of the year 1944 will be paid October 24.

Imperial Chemical Industries Limited.—An interim dividend of 3 per cent. on the ordinary stock will be paid on December 1 (less tax at the standard rate, reduced by dominion tax relief at 7d. in the £) to holders registered on September 28.

Sandberg Patents Extension Application.—Letters Patent were granted to Christer Peter Sandberg, Oscar Fridolf Alexander Sandberg, and Nils Percy Patrick Sandberg dated September 29, 1928, and numbered 324686 for the invention of improvements relating to the manufacture of railway and tramway rails. Notice is now given that on October 17 an originating summons (19445.352) issued on behalf of Gerald Gray Fitzmaurice and Francis John Kingdom Hull, asking that the term of the above-mentioned letters patent may be extended for 3½ years or for such other term as the Court may think fit, will come before Mr. Justice Morton in the Chancery Division for directions as to the hearing. Any notice of objection must, at least 11 days before October 17, be lodged at Room 248, Royal Courts of Justice, and a copy thereof served upon Jaques & Co., Solicitors, 8, Ely Place, E.C.1, and upon the Solicitor to the Board of Trade.

Canadian Pacific Railway.—For the month of August, 1944, gross earnings of the Canadian Pacific Railway amounted to $28,431,000, an increase of $1,575,000 in comparison with August, 1943. Working expenses, however, increased from $23,013,000 to $31,841,000, resulting in a loss on working of $3,410,000, compared with net earnings of $3,843,000 for August, 1943. Aggregate gross earnings from January 1 to August 31, 1944, were $210,322,000, an increase of $20,592,000 in comparison with the first eight months of 1943, but the net earnings of $22,929,000 were $6,048,000 lower. A memorandum attached to the return shows that the cost of the recent wage increases from the effective dates of their authorisation to the end of the year has been computed at $15,000,000. The retroactive proportion chargeable against working expenses has been included in the month of August leaving subsequent months to be burdened with the current cost only.

A. C. Wickman Limited.—Actual trading for the year 1943 resulted in a loss of £51,135, as against a profit for 1942 of £579,078 before providing for depreciation and all taxes. Therefore to arrive at a profit of £43,787, recourse has been made to the company's credit of £255,000 to the extent of £255,000. Adding to the profit of £43,787, the sume of 37,819 brought forward makes £81,606. From this amount allocations are made to capital redemption fund and expenses of new capital issues. The dividend for the year on the ordinary share capital of £275,000 is 8 per cent., less tax, against 12½ per cent. The Chairman's statement shows that trading results were adversely affected, *inter alia*, by cancellation and curtailment of contracts and by disproportionately high costs incurred in initiating production at Government assisted factories designed to meet emergency demands which had not materialised.

Manchester Ship Canal (Extension of Time).—The Manchester Ship Canal Company is applying to the Minister of War Transport for an Order under the Special Enactments (Extension of Time) Act, 1940, in respect of powers respectively conferred by Section 5 of the Manchester Ship Canal

British and Irish Railway Stocks and Shares

Stocks	Highest 1943	Lowest 1943	Prices Oct. 3, 1944	Prices Rise/Fall
G.W.R.				
Cons. Ord.	65¼	57¼	56¾	− 1
5% Con. Pref. ...	120½	108	115½	—
5% Red. Pref. (1950)	110½	106	105	—
5% Rt. Charge ...	137½	123½	130½	—
5% Cons. Guar. ...	135½	121 1/16	126½	—
4% Deb.	118	107½	114½	—
4½% Deb.	119	109 1/16	115½	—
4½% Deb.	124½	116	120½	—
5% Deb.	138	127	133½	—
2½% Deb.	77	72½	74½	—
L.M.S.R.				
Ord.	34 1/16	28	28¾	− 1¼
4% Pref. (1923) ...	66½	58	58	− ¼
4% Pref.	80⅛	73	74½	—
5% Red. Pref. (1955)	105¼	102	103½	—
4% Guar.	107	98½	100	—
4% Deb.	109¾	103½	105½	—
5% Red. Deb. (1952)	111½	108	109½	—
L.N.E.R.				
5% Pref. Ord. ...	12 3/16	7⅛	8	− ¼
Def. Ord.	5⅛	3⅛	4½	—
4% First Pref. ...	66½	57½	58	− ½
4% Second Pref. ...	36½	30½	30	− ½
5% Red. Pref. (1955)	99⅜	93	98½	—
4% First Guar. ...	102½	94	98	—
4% Second Guar. ...	93½	85⅜	89½	—
3% Deb.	86⅜	78⅜	83	—
4% Deb.	109 7/16	101⅜	105	—
5% Red. Deb. (1947)	106½	102	102	—
4½% Sinking Fund Red. Deb.	108	103½	105½	—
SOUTHERN				
Pref. Ord. *... ...	80	72½	74	—
Def. Ord.	26¾	20¾	23½	− 1
5% Pref.	119½	106¾	114½	—
5% Red. Pref. (1964)	114	108½	113½	—
5% Guar. Pref. ...	136	122	127½	—
5% Red. Guar. Pref. (1957)	117	109¾	113½	—
4% Deb.	117½	106	112½	—
5% Deb.	137	126	133	—
4% Red. Deb. (1962-67)	112	106½	109½	—
4% Red. Deb. (1970-80)	112	107	109½	—
FORTH BRIDGE				
4% Deb.	109	104⅞	104	—
4% Guar.	105	102½	102½	—
L.P.T.B.				
4½% "A"	125 11/16	114	120½	—
5% "A"	133 7/16	123	130½	—
3% Guar. (1967-72)...	100½	97	99	—
5% "B"	124	114	121½	—
"C"	72	53	68	—
MERSEY				
Ord.	34½	27	34	—
3% Perp. Pref. ...	68	59½	69	—
4% Perp. Deb. ...	104	102½	103	—
3% Perp. Deb. ...	83	78½	79	—
IRELAND*				
BELFAST & C.D.				
Ord.	9	6	9	− 1
G. NORTHERN				
Ord.	24½	16	27	+ 4
Pref.	—	—	43½	+ 4
Guar.	—	—	63	—
Deb.	—	—	83½	—
G. SOUTHERN				
Ord.	30	9½	59	+ 2
Pref.	30	11	59½	+ ¼
Guar.	64	26½	74½	+ ¼
Deb.	88⅛	51⅛	95½	—

* Latest available quotation

Act, 1926 (the time for the exercise of which was extended by Section 22 of the Manchester Ship Canal Act, 1936) and by Section 5 of the 1936 Act, for the construction of certain railways.

India General Navigation & Railway Co. Ltd.—The ordinary dividend for the year 1943 is being maintained at 5 per cent., less tax at 5s. 2d. in the £. Net profit is £276,212, against £308,562. The balance is struck after depreciation but before making provision for taxation, for which £250,000 was set aside last year for liability not then ascertained.

New Staff Canteen at Eastleigh.—A permanent canteen for nearly 700 employees of Eastleigh Running Shed, Southern Railway, was opened recently by Mr. E. S. Moore, Western Divisional Locomotive Superintendent, who was accompanied by Southern Railway and trade union officials. This takes the place of a mobile canteen which was presented by railway staff in Buenos Aires in January, and which supplied 78,162 teas, 161,825 hot beverages, and 57,042 subsidiary meals during a period of eight months. The new canteen has been carefully planned. It has been provided by the company, but a committee representative of the employees will be responsible for running it.

C.P.R. Locomotive Power.—The Canadian Pacific Railway recently took delivery from the Canadian Locomotive Co. Ltd. of a mixed-traffic locomotive of the "2400" series (No. 2418), the twenty-third engine delivered under the C.P.R. 1944 equipment programme, which calls for the addition of 82 locomotives. Earlier deliveries under the 1944 order for locomotives consisted of 20 2-8-2-type engines from the Montreal Locomotive Works Limited, and two Pacific-type engines built by the C.P.R. itself at its Angus Shops. Locomotives still on order are five 2-8-2s, 44 Pacifics and ten 1,000-h.p. diesel-electric shunters, the last-named from the American Locomotive Company, Schenectady, N.Y.

Better Cups of Tea on the L.N.E.R.—To make more refreshing the 73,500 cups of tea served to rail travellers every day at its refreshment rooms, teabars and platform trolleys, the L.N.E.R. has distributed to all its staff concerned a booklet which, with the aid of a clearly written text and several photographs and diagrams, explains the art of good tea-making. Sir Ronald Matthews, Chairman of the company, in a foreword, says that the book should help and encourage railway teamakers to provide customers with that "nice cup of tea" which, however small an item it may represent in the many services which are offered to the travelling public, may be the means of ensuring a wide measure of their future goodwill. The booklet entitled "Tea for Travellers," has been prepared by the Empire Tea Bureau.

Railway Training for Juvenile Delinquents.—A plan has been drawn up by the Atchison, Topeka & Santa Fe Railway of the United States whereby it will take into its employ wards of the juvenile courts, and thereby assist in the rehabilitation of delinquents. The experiment is beginning with the employment of 50 Mexican boys who have been before the courts, and who will be incorporated in a gang of track labourers at Daggett, California. They will receive standard pay and all the benefits of the labour agreements, but half of each boy's wages will be held by the Juvenile Probation Officer of Los Angeles County, as trustee, until such time as the jurisdiction of the district court over the boy comes to an end. Subject to the order of the court, the accumulated money will then be paid to the boy or his parents. The boys will work a six-day week of 8 hr. a day, and if their work is good, they will have the opportunity of advancement in the Santa Fe service. The lead of the Santa Fe in this matter is greatly appreciated in California, and the Mexican Consul-General in California describes the programme as an active furtherance of the "good neighbour" policy of the United States.

Cost-of-Living Index.—The official cost-of-living index figure at September last was 102 points above the level of July, 1914 (the same as at August 1 last). In September, 1938, it was 56 points, and in September, 1939, 55 points above July, 1914. The new index figure means an increase of slightly more than 30 per cent. above the level of September, 1939.

Bolivia Railway Company.—Net earnings for the half-year ended June 30, 1944, are sufficient to pay interest of 1·392 per cent. on the 5 per cent. mortgage and collateral trust income bonds, Series "A." The balance required to make up interest of 1½ per cent. (6s. on each £20 bond) is provided by the Antofagasta Railway Company. Out of the same net earnings a distribution of 1½ per cent. will be made to holders of the old first mortgage bonds who have not accepted the plan of reorganisation.

Post-War American Railway Prospects.—U.S.A. railway executives, at a recent meeting, discussed business prospects with particular reference to changes which may result from the fall of Germany. The consensus of opinon was that there will be a decline in the total volume of goods traffic, made up of a fairly heavy decline in the eastern part of the country, but with an increase in the west. There has been an improvement in the man-power situation recently, and railways generally are better off in this respect than they have been for many months. A total of 65,000 workers was added to the railway labour force in the second quarter of 1944, but the railways still require some 85,000 workers.

Stansstad-Engelberg Railway.—The number of passengers carried over this Swiss privately-owned system in 1943 increased to 471,200 from 428,700 in 1942. Working receipts for 1943 were fr. 600,859, compared with fr. 600,438; the small amount of the increase was due largely to goods traffic having shown a substantial decrease. Working expenditure, at fr. 456,908, was slightly lower than in 1942 (fr. 460,058), and the working surplus increased to fr. 143,951 (fr. 140,380). The profit and loss account closed with a favourable balance of fr. 3,195 (fr. 2,936). No dividend was paid on the preference share capital (fr. 480,000) or the ordinary share capital (fr. 160,000).

Wagon Building in Spain.—Compañia Auxiliar de Ferrocarriles, the Spanish wagon-building concern, stated in its 1943 report that its order books were full, but that production was proceeding slowly on account of the shortage of materials. By the middle of 1943, a new steel oven of 35 *tonnes* capacity was completed in one of the company's works, but because of shortage of coal it proved impossible to work it to capacity. The main works are at Beasain, and the Madrid and Irun shops deal mainly with repair work. The combined output in 1943, inclusive of repairs, represented a value of 58,400,000 pesetas, and additional orders secured in that year increased the value of orders in hand or in the order books to 112,600,000 pesetas, compared with 104,600,000 pesetas for 1942. After allocation of 3,300,000 pesetas to depreciation, there was a net profit of 2,500,000 pesetas, against 3,960,000 pesetas for 1942. A dividend of 6 per cent. (same) was paid.

International Railways of Central America.—The directors are calling for redemption for the sinking fund on November 1 of $45,000, principal amount of the first mortgage 60-year 5 per cent. gold bonds and £46,720 principal amount of 5 per cent. first mortgage 60-year gold bonds.

Viège-Zermatt Railway.—The number of passengers carried over this Swiss privately-owned system rose to 208,465 in 1943, compared with 177,236 in the previous year. Working receipts for 1943 increased by fr. 165,254 to fr. 1,006,123, and working expenditure amounted to fr. 645,956 (fr. 532,051); the working surplus thus was fr. 360,167 (fr. 308,818). The profit and loss account closed with a favourable balance of fr. 505, which was carried forward. No dividend (as for 1942, was paid on the preference share capital of fr. 700,000 or the ordinary share capital of fr. 4,300,000. Brief details were given in our July 14 issue concerning the company's recently-issued fr. 3,000,000 4 per cent. loan.

Contracts and Tenders

Below is a list of orders placed recently by the Egyptian State Railways:—

Wm. Terrell & Sons Ltd.: Steam gland packing.

Turner Bros. Asbestos Co. Ltd.: Steam gland packing.

Arthur Balfour & Co. Ltd.: Hacksaw blades, hand tools, high speed steel, carbon steel.

British Patent Perforated Paper Co. Ltd.: Toilet paper.

Chloride Electrical Storage Co. Ltd.: Batteries, secondary cells.

Cooper & Sons (Sheffield) Ltd.: Screwdrivers.

Metropolitan-Vickers Electrical Export Co. Ltd.: Oil circuit breakers, cartridge fuses, etc.

English Electric Co. Ltd.: Ironclad floor mounting switch pillars.

Morgan Crucible Co. Ltd.: Crucibles, etc.

Pickford Tool Co. Ltd.: Screwing and cutting tools, tape dies, etc.

Ferguson & Timpson Limited: Steam joints.

Le Carbone Limited: Cells, soda, etc.

Thomas Turton & Sons Ltd.: Bars, flat steel.

Samuel Osborn & Co. Ltd.: H.S. steel.

General Electric Co. Ltd.: Lampholders, etc.

Midland Electric Mfg. Co. Ltd.: Fuse carriers.

Falk Stadelmann & Co. Ltd.: Switches boxes.

Siemens Bros. & Co. Ltd.: Leclanché glass jars, etc.

Forthcoming Meetings

October 9 (*Mon.*)—Society of Engineers, in the Apartments of the Geological Society, Burlington House, W., 4.30 p.m. for 5 p.m. Technicolour talkie film "Die-casting" by the Imperial Smelting Corporation Limited, followed by a discussion. Ordinary meeting.

October 12 (*Thu.*).—Institute of Fuel, at the Connaught Rooms, 12.30 p.m. for 1 p.m. Luncheon with the Rt. Hon. Lord Woolton as principal guest, followed by an address by the President, Dr. E. W. Smith, C.B.E., and the Melchett Lecture, by Dr. J. G. King. O.B.E., at 2.15 p.m.

Railway Stock Market

Reflecting the small amount of new buying in evidence, stock markets have been slightly reactionary, although there was again very little selling. British Funds were a firm exception, an upward tendency having been renewed under the lead of 3½ per cent. War Loan. Insurance shares moved back after publication of the Government's social security proposals, but later recovered part of earlier declines. Industrial shares showed small movements and no decided tendency. Foreign bonds were inclined to go back; an exception again were Brazilian bonds, which continued an upward trend.

Argentine rails tended to rally, and sentiment was aided by more hopeful views as to the political outlook in the Republic and also by the revised and substantially increased offer now made for the Primitiva Gas Company by the Argentine authorities. As in other sections of stock markets, however, business has continued on a small scale. Brazilian railway stocks were generally firm, again reflecting the buoyancy of Brazilian bonds. Cordoba Central Trust stocks were marked up, the first debentures to par, and the "B" debentures to 82, after announcement of dates of the redemption proposals. United of Havana 1906 debentures brightened, rallying strongly on renewed talk of a capital reorganisation scheme. On the other hand, Canadian Pacifics weakened, in sharp contrast to dollar stocks generally, the incidence of the wages award having borne with exceptional weight on the past month's earnings and has had the effect of reducing the possibility of a small increase in dividend for the current year. It may be recalled that in view of the wages award the directors earlier decided against resumption of payment of an interim dividend.

Home rails moved back, reflecting the continued inactivity of markets, but selling was light; the trend of values was governed mainly by the very small demand in evidence. As in the case of industrial shares, sentiment has been unsettled by the social security proposals because of the further addition to production and operating costs. The latter will bear particularly heavily on the railways; but on the other hand, it is realised that whatever the final settlement as to post-war organisation and control it will have to involve upward adjustments of railway charges, possibly on the lines of the "Square Deal" proposals brought forward just before the war. Evidence that the railways are looking ahead has been provided by confirmation that they hope to provide an air service on a worthy scale, and also by the hope, expressed by the Deputy-Chairman of the Southern, that in future negotiations as to the position of the railways, regard will be had to the record of achievement of private enterprise and that decisions will turn on how best the public can be served and not on political considerations.

Compared with a week ago, Great Western moved back from 57⅞ to 56¾, but the 5 per cent. preference remained at 115½ and the 4 per cent. debentures at 114½. L.M.S.R. ordinary reacted from 30 to 28⅞, the senior preference easing from 74¾ to 74, and the 1923 preference declining from 58½ to 57½, but there was very little selling, the lower levels of home railway junior stocks being attributed to inactive markets and the consequent falling off in demand. Prior charges generally have been well maintained. L.N.E.R. first preference was 57½, as against 58½ a week back; the second preference declined from 30½ to 29¾, the deferred and preferred stocks also losing recent gains. Among Southern stocks, the preferred was a point down at 73½, and the deferred moved back from 24¼ to 23¾. London Transport "C" reflected the prevailing tendency, and was 67¾, after touching 68, but nevertheless showing a small gain as compared with a week ago.

B.A. Gt. Southern kept at 12, but improvement from 55 to 56½ was shown in the 4 per cent. debentures, although generally other Argentne railway stocks have not regained earlier declines. San Paulo ordinary kept at 48½. Great Western of Brazil issues remained active, but last week's gains were not held. United of Havana 1906 debentures moved up from 26½ to 28½ on revived market talk of a capital scheme. French rails became less firm, Midi easing from 73½ to 70½, and Nord from 85½ to 83. Canadian Pacifics reacted from 15 to 14⅜ on wider recognition of the extent to which earnings will be affected by the higher wages bill.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ending	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1942/3	No. of Weeks	Aggregate traffics to date: Totals 1943/4	Aggregate traffics to date: Totals 1942/3	Aggregate traffics to date: Increase or decrease	Shares or stock	Prices: Highest 1943	Prices: Lowest 1943	Prices: October 3, 1944	Prices: Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	24.9.44	19,180	– 9,810	38	1,106,640	1,088,850	+ 17,790	Ord. Stk.	15¾	10	10½	Nil
	Argentine North Eastern ...	753	23.9.44	18,348	+ 3,576	12	202,710	173,976	+ 28,734	,,	7⅞	5	4½	Nil
	Bolivar	174	Aug., 1944	5,854	+ 1,346	35	42,517	41,913	+ 604	6 p.c. Deb. Bonds	22½	18	17½	Nil
	Brazil	—	—	—	—	—	—	—	—	,,	23½	19	19	Nil
	Buenos Ayres & Pacific ...	2,807	23.9.44	115,200	+ 14,400	12	1,357,860	1,053,420	+ 304,440	Ord. Stk.	8½	5½	5½	Nil
	Buenos Ayres Great Southern	5,080	23.9.44	150,360	– 10,680	12	1,981,320	1,772,580	+ 208,740	Ord. Stk.	17⅛	9½	12½	Nil
	Buenos Ayres Western ...	1,924	23.9.44	64,860	+ 9,960	12	751,320	604,680	+ 146,640	,,	16	9⅝	10½	Nil
	Central Argentine	3,700	23.9.44	175,185	+ 32,976	12	2,066,496	1,613,763	+ 452,733	,,	10¾	6½	8½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4¼	3	4	Nil
	Cent. Uruguay of M. Video	972	23.9.44	27,581	– 3,210	12	368,219	377,432	– 9,213	Ord. Stk.	7⅜	4½	4½	Nil
	Costa Rica	262	July, 1944	28,322	+ 5,071	4	28,322	23,251	+ 5,071	Stk.	16	12½	16	Nil
	Dorada	70	Aug., 1944	29,875	+ 4,645	35	207,565	172,147	+ 35,418	1 Mt. Deb.	96	92	100½	£5 19 5
	Entre Rios	808	23.9.44	22,128	– 138	12	272,736	248,070	+ 24,666	Ord. Stk.	9	5½	5	Nil
	Great Western of Brazil ...	1,030	23.9.44	20,100	+ 2,100	38	806,700	595,100	+ 211,600	Ord. Sh.	59/9	24/4½	30/-	Nil
	International of Cl. Amer. ...	794	July, 1944	$577,243	– $3,278	30	$4,777,756	$4,485,160	+ $292,596	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	2½	1⅛	1	Nil
	La Guaira & Caracas... ...	22½	Aug., 1944	9,355	+ 2,070	35	64,295	68,425	– 4,130	5 p.c. Deb.	90	80	79	6½
	Leopoldina	1,918	23.9.44	58,039	+ 21,296	38	1,772,997	1,305,845	+ 467,152	Ord. Stk.	7¾	4	4½	Nil
	Mexican	483	21.9.44	ps. 498,900	+ ps.95,200	12	ps. 5,589,500	ps. 4,781,100	+ ps. 808,400	Ord. Stk.	1⅛	⅜	⅜	Nil
	Midland Uruguay	319	Aug., 1944	16,470	+ 1,810	9	34,921	31,115	+ 3,806	—	—	—	—	—
	Nitrate	382	15,9,44	6,187	– 490	37	132,243	108,825	+ 23,418	Ord. Sh.	83/9	71/3	70/-	£3 11 5
	Paraguay Central	274	22.9.44	$50,912	– $23,118	12	$680,370	$680,900	– $530	Pr. Li. Stk.	75	51½	72	8½
	Peruvian Corporation ...	1,059	Aug., 1944	127,085	+ 20,162	9	245,725	206,941	+ 33,784	Pref.	17⅜	10¾	10½	Nil
	Salvador	100	June, 1944	c 80,000	– c 26,000	52	c 1,484,000	c 1,243,000	+ c 241,000	—	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	71	57	48	£4 3 4
	Taltal	156	Aug., 1944	3,720	– 2,495	9	5,535	9,730	– 4,195	Ord. Sh.	37/6	20/-	17/6	Nil
	United of Havana	1,301	23.9.44	58,139	+ 4,380	12	591,782	621,350	– 29,568	Ord. Stk.	1/16	3¼	3	Nil
	Uruguay Northern	73	Aug., 1944	1,320	– 120	9	2,806	2,827	– 21	—	—	—	—	—
Canada	Canadian Pacific	17,018	21.9.44	1,262,800	+ 60,600	38	45,841,600	41,503,800	+ 4,337,800	Ord. Stk.	18	13⅞	14½	3½
India†	Barsi Light	202	July, 1944	24,878	– 3,817	17	100,365	91,770	+ 8,595	Ord. Stk.	—	—	120½	£3 14 8
	Bengal-Nagpur	3,267	July, 1944	988,650	– 17,775	17	4,183,275	4,235,325	– 52,050	Ord. Stk.	104½	101½	—	—
	Madras & Southern Mahratta	2,939	Mar., 1944	358,125	– 7,925	52	10,447,866	8,913,924	+ 1,533,924	—	—	—	—	—
	South Indian	2,349	20.12.43	199,410	+ 24,449	37	5,321,558	4,562,445	+ 750,113	—	—	—	—	—
Various	Egyptian Delta	607	20.8.44	19,270	+ 4,226	20	259,759	197,214	+ 62,545	Prf. Sh.	6 1/16	2⅞	4	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	45	32	61½	Nil
	Midland of W. Australia ...	277	July, 1944	19,178	– 15,047	4	19,178	34,225	– 15,047	Inc. Deb.	101	93	99½	£4 0 5
	Nigerian	1,900	24.6.44	246,920	– 7,585	4	—	—	—	—	—	—	—	—
	South Africa	13,291	19.8.44	842,234	– 1,952	19	17,520,691	16,594,138	+ 926,483	—	—	—	—	—
	Victoria	4,774	April, 1944	1,188,999	– 212,162	—	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current price and are within a fraction of 1/16. Argentine traffics are given in sterling calculated @ 16⅔ pesos to the £

† Receipts are calculated @ 1s. 6d. to the rupee